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MARQUESAN SOMATOLOGY
WITH COMPARATIVE NOTES ON SAMOA
AND TONGA

By LOUIS R. SULLIVAN

BASED ON THE FIELD STUDIES OF E. S. CRAIGHILL HANDY AND WILLOWDEAN C. HANDY

Memoirs of the Bernice P. Bishop Museum
Volume IX, Number 2

WITH PLATES XXXVI-XLI

BAYARD DOMINICK EXPEDITION

PUBLICATION NUMBER 6

HONOLULU, HAWAII
BISHOP MUSEUM PRESS
1923

ERRATA

In "Marquesan Somatology," by Louis R. Sullivan, B. P. Bishop Mus. Mem., Vol. IX, number 2, 1923, Plates XXXVI-XLI should read "Volume IX" instead of "Volume VIII."

CONTENTS

	PAGE
Introduction	141
Acknowledgments	141
The population	141
Method	143
Description of the Marquesas	145
General comparison of Marquesans with Samoans and Tongans	160
Inter-island differences	167
Reconstruction of the different physical types in the Marquesas	169
Characters associated with hair form	169
" " " stature	174
" " " head form	177
" " " face form	178
" " " nose form	182
" " " the enamel on the upper incisor teeth	187
" of two Marquesan types	187
Analysis and classification of individuals	188
Inter-island distribution of two types	189
Detailed averages of the different types	190
A detailed analysis of the Samoans	196
Association of characters of the Samoans	197
The frequency of two physical types in Samoa	202
A detailed analysis of the Tongans	205
Associations of characters of the Tongans	205
The frequency and distribution of two types in Tonga	209
Racial affinities of physical types in Polynesia	211
A brief digest of the literature	211
Type I, called Polynesian	215
Racial affinities of the Polynesians	216
Type II, probably Indonesian	228
Racial affinities of the Indonesian type in Polynesia	229
Relationship of the two types	231
A possible third type	232
Summary	233
Individual records	237
Key to tables of individual records	237

ILLUSTRATIONS

	FOLLOW PAGE
PLATE XXXVI Type I—Polynesian men of the Marquesas	249
XXXVII Type II—Indonesian men of the Marquesas	"
XXXVIII Type I—Polynesian women of the Marquesas	"
XXXIX Type II—Indonesian women of the Marquesas	"
XL Mixed and unclassified types	"
XLI Types mixed with Caucasians and Asiatics	"

MARQUESAN SOMATOLOGY WITH COMPARATIVE NOTES ON SAMOA AND TONGA

By LOUIS R. SULLIVAN

Based on the Field Studies of E. S. Craighill Handy and Willowdean C. Handy

INTRODUCTION

ACKNOWLEDGMENTS

THE field studies which form the basis of this paper were made by E. S. Craighill Handy in conjunction with his ethnological survey of the Marquesas. In the field Mr. Handy was ably assisted by his wife, Willowdean C. Handy. Ralph Linton assisted in the photography. By arrangement between the American Museum of Natural History and the Bernice P. Bishop Museum the field notes were turned over to me for analysis and interpretation. The mathematical computations were prepared by Mrs. Lois Treadwell Ruml and my wife, Bessie P. Sullivan, who also prepared the appendix and assisted throughout the preparation of the manuscript.

The somatological studies in the Marquesas followed the plan of those already completed for Samoa¹ and Tonga.² In addition to the somatological records Mr. Handy supplied me with full and valuable notes on the history of the population, opportunities for intermixture with whites and Asiatics, and customs of deformation of parts of the body. I am likewise indebted to him for valuable suggestions as to possible inter-island differences in culture and physical type which made my analysis much easier. The comparative data from Samoa and Tonga were furnished by the field studies of E. W. Gifford and W. C. McKern, acknowledged in previous papers.

THE POPULATION

The material submitted for study consisted of the records of 201 persons. When the admitted mixed-bloods, senile and adolescent individuals were eliminated there remained two series consisting of 84 adult men and 74 adult women. Three persons with a small amount of Hawaiian blood were included in the analysis. By nativity the individuals examined were distributed as follows: Nuku Hiva 18, Ua Huku 18, Ua Pou 47, Hiva Oa 61, Tahu Ata 2, and Fatu Hiva 12. The material was not selected and represents persons of all social classes and occupations. It may be regarded as a fair qualitative sample of the Marquesan people of today. Incidentally the 201 persons represent about 11 per cent of the total population.

¹ Sullivan, Louis R., A contribution to Samoan somatology: B. P. Bishop Mus. Mem. vol. viii, No. 2, 1921.

² Sullivan, Louis R., A contribution to Tongan somatology: B. P. Bishop Mus. Mem. vol. viii, No. 4, 1922.

The story of the Marquesan population is the story of the Hawaiian and other Polynesian populations. From the data in Table I, supplied to me by Handy, it will be seen that in the course of the last 150 years the estimated population has shrunk from about 100,000 to less than 2,000. Handy says:³

The condition of the health of the modern Marquesan is most distressing. I speak without exaggeration when I say that I doubt if there is a wholly sound physical specimen of a Marquesan alive. The principal diseases that are rampant are leprosy, syphilis, elephantiasis, a very rapid wasting pulmonary tuberculosis called *pokoko*, tubercular trouble in the throat, glands, and intestines, and deep ulcers and carbuncles. Dental caries is common.

In view of the theories of a Caucasoid origin of the Polynesian peoples it is likewise very desirable to keep clearly in mind the possibilities and probabilities of modern intermixture.

From 1800 to 1838 there were only a few deserters from whalers. In 1838 the Catholic missionaries arrived and the French took possession of Nuku Hiva, Ua Pou, and Ua Huka. A small French colony with a maximum population of 100 was established. The white population probably never exceeded 100 in the whole group. Today it consists of about a dozen Catholic fathers and sisters and about twenty others. In 1880 a group of Cantonese Chinese were brought into the islands. It is probable that there were never more than 100 in the islands. There are now about thirty. Native women used to marry freely with the Chinese but the intermarriage ceased about ten years ago. The reason for the number of part Chinese today is not the number of Chinese immigrants, but the fact that the half-Chinese are sturdy, healthy, and good breeders. They resist the diseases that take off the natives and half whites.

Another point of interest is Handy's statement to the effect that the Marquesans are very accurate in remembering ancestry and as a general thing showed neither desire to conceal nor to boast of white blood if they had it. It is not a matter either for pride or shame. The amount of unadmitted modern white blood in our series is very probably negligible.

TABLE I.—THE POPULATION OF THE MARQUESAS

DATE OF CENSUS	ESTIMATED POPULATION
1. Prehistoric:	Estimated to have been between 50,000 and 100,000, fluctuating with periods of plenty and famine.
2. 1773:	Cook estimated 50,000 for three southeastern islands. About 100,000 for the entire group.
3. 1804:	Krusenstern estimated 16,000 for Nuku Hiva. About 50,000 for entire group.
4. 1838:	Dupetit-Thouars estimated 20,000 for the entire group.
5. 1856:	Jouan estimated 12,500 for entire group.
6. 1867:	Lawson manuscript gives 7,411 for entire group.
7. 1884:	Clavel estimated 4,865 distributed as follows:

³ Personal communication.

	Men	Women	
Nuku Hiva.....	524	456	
U'a Huka.....	105	84	
U'a Pou.....	196	180	
Fatu Hiva.....	321	318	
Tahu Ata.....	260	260	
Hiva Oa.....	1,116	1,045	
Total.....	2,522	2,343	4,865

8. 1905: Pacific Islands Pilot gives 3,500.

9. 1922: Estimated roughly at 1,800.

METHOD

All measurements were taken in accordance with the regulations of the International Agreement. In outline the measurements were as follows:

ANTHROPOMETRIC CHARACTERS

1. Stature: recorded to the nearest centimeter (shoes removed).
2. Shoulder height: same position as in 1.
3. Arm length: acromion to tip of middle finger.
4. Height sitting.
5. Arm reach or span: maximum.
6. Head length: glabella to opisthocranium.
7. Maximum head width.
8. Minimum frontal diameter.
9. Maximum face width: bizygomatic.
10. Bigonial diameter at the angles of the mandible avoiding as much of the muscles as possible.
11. Anatomical face height: nasion to gnathion.
12. Nasal height: nasion to subnasal.
13. Nasal width: alare to alare avoiding pressure.
14. Physiognomic ear length or height.
15. Physiognomic ear breadth.

INDICES

16. Relative shoulder height = $\left\{ \frac{\text{Measurement No. 2} \times 100}{\text{Measurement No. 1}} \right\}$
17. Relative arm length = $\left\{ \frac{\text{Measurement No. 3} \times 100}{\text{Measurement No. 1}} \right\}$
18. Relative sitting height = $\left\{ \frac{\text{Measurement No. 4} \times 100}{\text{Measurement No. 1}} \right\}$
19. Relative arm reach or span = $\left\{ \frac{\text{Measurement No. 5} \times 100}{\text{Measurement No. 1}} \right\}$
20. Cephalic or length-breadth index = $\left\{ \frac{\text{Measurement No. 7} \times 100}{\text{Measurement No. 6}} \right\}$
21. Transverse fronto-parietal index = $\left\{ \frac{\text{Measurement No. 8} \times 100}{\text{Measurement No. 7}} \right\}$
22. Transverse cephalo-facial index = $\left\{ \frac{\text{Measurement No. 9} \times 100}{\text{Measurement No. 7}} \right\}$

23. Zygomatico-frontal index = $\left\{ \frac{\text{Measurement No. 8} \times 100}{\text{Measurement No. 9}} \right\}$
24. Zygomatico-mandibular index = $\left\{ \frac{\text{Measurement No. 10} \times 100}{\text{Measurement No. 9}} \right\}$
25. Anatomical facial index = $\left\{ \frac{\text{Measurement No. 11} \times 100}{\text{Measurement No. 9}} \right\}$
26. Nasal index = $\left\{ \frac{\text{Measurement No. 13} \times 100}{\text{Measurement No. 12}} \right\}$
27. Physiognomic ear index = $\left\{ \frac{\text{Measurement No. 15} \times 100}{\text{Measurement No. 14}} \right\}$

Through a series of accidents Handy was not supplied with a stature rod until near the conclusion of his studies. He used a makeshift apparatus consisting of a pole and a tape. While the measures were taken with the greatest care Handy suggests that the body measurements may not be strictly comparable with other studies but are valuable for intra-group comparison. I had no opportunity to do field work with Handy, but he was trained in anthropometric technique by Professor E. A. Hooton, whose technique is for the most part similar to my own and that of Gifford and McKern. It is possible but not altogether certain that Handy located the nasion at a point lower than Gifford, McKern and I did. This possibility should be borne in mind in comparative studies on facial height and nasal height.

The anthropometric data were supplemented by observations on characters not quantitatively measurable or attribute characters. The conceptions held and the standards used for this part of the field work have been discussed in detail in a previous paper of this series.⁴ It is sufficient to say that such characters were described in terms of their total range in mankind. It is obvious of course that their chief value lies in their utility for intra-group studies. Only the most general comparison can be made with the studies of other students. Hair samples and photographs of the individuals studied were submitted with the records. These enabled me to gauge the differences in the conceptions as given by Handy, Gifford, McKern, and myself. The most important difference is in our standards for hair form. Handy had a tendency to class hair form about two degrees higher than I would have done in the scale of waviness or curliness. In particular he used curly in the popular sense, whereas I reserve this term for a very particular and rare form of hair. This does not imply that Handy is wrong and that I am right. It is most probable that I somewhat minimize the degree of curliness and that Handy somewhat magnifies it. In regard to women who have longer hair our views are more nearly in accord.

⁴B. P. Bishop Mus. Mem. VIII, 4, 1922.

DESCRIPTION OF THE MARQUESANS

While we have many verbal descriptions of the Marquesans by travelers and writers, anthropometric data are extremely rare and confined almost wholly to the cranium. Information on stature was furnished by several of the early explorers of this region, but the conclusions are not always in accord. Deniker gives the average stature of 202 men as 174.3 centimeters. The cranial length-breadth index is given by the same author as 76.4 for thirty crania. Broca's figures for the same index are 75.0 for men and 78.2 for women.

Some of the larger of our craniometric publications have described Marquesan crania. Davis described 29 of them, the German catalog 5, the Godeffroy catalog 4, Welcker 16, and Le Batard 24. Le Batard gave also the principal head measurements of 2 persons. Von Luschan also described some Marquesan skeletal material. It is apparent that the present contribution of detailed observations on 84 men and 74 women can in no sense be considered a duplication of work already done.

The results of the seriation and averages are summarized in Tables II, III, and IV. Table II is given as a gauge of the homogeneity of the series. While a series of less than 100 does not lend itself to strict statistical analysis it should show some tendency to form a normal frequency distribution for a majority of characters, if we are dealing with a homogeneous group. But such is not the case. The bimodality encountered in the Tongan series in head length, face width, bigonial diameter, face height, and face index are here repeated in a much more marked form. The bimodality, multimodality or skew distribution extends to nearly every character. In the Marquesan series stature, span, minimum frontal diameter, nasal width, ear width, cephalic, facial and nasal indices show a bimodal tendency in both sexes. The other characters are bimodal in one sex and irregular, or multimodal in the other. Only one or two characters are unimodal and regular normal curves. This feature of the series is discussed on page 163.

The Marquesans are tall, with long, wide head, a high, wide face, and a high, wide nose. All of the dimensions of the head and body are large, indicating their massive size. They are on the verge of brachycephaly. But one cannot be sure that the heads are wholly undeformed. Handy says that artificial molding of the head seems to have been universally practiced in the following way: mothers would run the hand up and back across the infant's head, pressing down with the palm and in with the fingers in a way that would tend to make the forehead more sloping, the frontal region narrower, and the back of the head somewhat elevated

or peaked. There is no evidence of any other kind of wrapping or deformation. The effects of this treatment of infants are very evident in the photographs, particularly in the foreheads of elderly men. The practice is identical with that in Hawaii. It is difficult to say just how much it would affect the cephalic index if at all. Handy also states that the nose was flattened during infancy.

TABLE 11.—SERIATION OF ANTHROPOMETRIC CHARACTERS IN ABSOLUTE NUMBERS

1. STATURE			2. SHOULDER HEIGHT			3. ARM LENGTH			4. ARM REACH		
Centimeters	Male	Female	Centimeters	Male	Female	Centimeters	Male	Female	Centimeters	Male	Female
145	....	0	115	....	0	55	....	....	145	....	....
6	....	0	16	....	0	6	....	....	6	....	....
7	....	1	17	....	0	7	....	....	7	....	....
8	....	0	18	....	0	8	....	....	8	....	....
9	....	0	19	....	1	9	....	....	9	....	1
—	—	—	—	—	—	—	—	—	—	—	—
150	....	1	120	....	0	60	....	0	150	....	3
1	....	1	1	....	1	1	....	0	1	....	1
2	....	2	2	....	0	2	....	0	2	....	1
3	....	0	3	....	0	3	....	1	3	....	1
4	....	2	4	....	0	4	....	0	4	....	0
—	—	—	—	—	—	—	—	—	—	—	—
155	....	2	125	....	1	65	....	2	155	....	1
6	....	6	6	....	1	6	....	0	6	....	0
7	....	5	7	....	1	7	....	2	7	....	6
8	....	5	8	....	3	8	....	2	8	....	3
9	....	4	9	....	6	9	....	6	9	....	8
—	—	—	—	—	—	—	—	—	—	—	—
160	0	9	130	0	7	70	0	6	160	0	6
1	2	5	1	0	5	1	0	6	1	0	6
2	3	2	2	1	3	2	1	3	2	0	1
3	5	4	3	0	5	3	3	8	3	2	4
4	3	4	4	2	6	4	3	2	4	0	2
—	—	—	—	—	—	—	—	—	—	—	—
165	2	6	135	1	7	75	3	6	165	1	6
6	6	6	6	5	1	6	3	6	6	1	2
7	5	2	7	6	4	7	6	1	7	5	2
8	4	1	8	4	8	8	8	1	8	2	4
9	7	3	9	10	2	9	12	1	9	2	0
—	—	—	—	—	—	—	—	—	—	—	—
170	5	1	140	6	4	80	5	2	170	4	5
1	3	0	1	9	1	1	5	1	1	3	1
2	6	0	2	10	2	2	6	0	2	3	0
3	5	0	3	5	1	3	2	1	3	5	2
4	6	1	4	4	0	4	4	....	4	3	1
—	—	—	—	—	—	—	—	—	—	—	—
175	4	....	145	0	1	85	1	....	175	6	0
6	4	....	6	2	0	6	1	....	6	3	0
7	1	....	7	2	0	7	2	....	7	3	0
8	5	....	8	3	0	8	0	....	8	2	0
9	1	....	9	1	0	9	0	....	9	3	0
—	—	—	—	—	—	—	—	—	—	—	—
180	1	....	150	2	....	90	0	....	180	2	0
1	0	....	1	2	....	1	0	....	1	7	1
2	0	....	2	0	....	2	1	....	2	4	2
3	0	....	3	1	....	3	0	....	3	3	0
4	1	....	4	0	....	4	1	....	4	4	0
—	—	—	—	—	—	—	—	—	—	—	—
Total	79	73	155	1	....	Total	67	57	185	5	....
			6	1	....				6	1	....
			7	0	....				7	0	....
			8	0	....				8	1	....
			9	0	....				9	0	....
			—	—	—				—	—	—
			Total	78	71				190	0	....
									1	1	....
									2	0	....
									3	1	....
									4	0	....
									—	—	—
									195	0	....
									6	0	....
									7	1	....
									—	—	—
									Total	78	70

5. SITTING HEIGHT			6. HEAD LENGTH			7. HEAD WIDTH			8. MINIMUM FRONTAL		
Centimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female
75	0	1	170	----	2	135	----	0	85	----	----
6	1	0	1	----	1	6	----	0	6	----	----
7	0	1	2	----	2	7	----	0	7	----	----
8	0	1	3	----	0	8	----	0	8	----	----
9	0	3	4	----	3	9	----	1	9	----	----
<hr/>			<hr/>			<hr/>			<hr/>		
80	0	3	175	----	2	140	0	1	90	0	0
1	5	6	6	----	2	1	0	0	1	0	1
2	1	3	7	----	4	2	0	0	2	0	1
3	2	7	8	2	2	3	3	0	3	2	2
4	4	9	9	0	1	4	2	3	4	1	0
<hr/>			<hr/>			<hr/>			<hr/>		
85	6	3	180	1	7	145	2	3	95	1	7
6	11	13	1	1	3	6	1	6	6	1	3
7	7	7	2	3	5	7	2	6	7	7	1
8	8	5	3	1	7	8	5	5	8	5	3
9	10	5	4	0	0	9	4	5	9	2	3
<hr/>			<hr/>			<hr/>			<hr/>		
90	6	1	185	2	6	150	3	11	100	11	17
1	6	1	6	3	6	1	3	6	1	3	5
2	5	1	7	3	4	2	8	7	2	6	7
3	1	0	8	9	3	3	12	9	3	8	5
4	2	0	9	3	2	4	7	2	4	6	3
<hr/>			<hr/>			<hr/>			<hr/>		
95	2	----	190	7	4	155	10	2	105	8	4
6	0	----	1	1	1	6	6	2	6	4	2
7	1	----	2	3	2	7	2	3	7	2	0
8	0	----	3	5	0	8	3	0	8	3	0
9	0	----	4	3	1	9	2	1	9	1	0
<hr/>			<hr/>			<hr/>			<hr/>		
Total	78	70	195	6	2	160	4	1	110	4	2
			6	2	1	1	0	0	11	1	0
			7	5	0	2	2	0	12	4	1
			8	3	0	3	0	0	13	2	2
			9	2	0	4	1	0	14	1	1
			<hr/>			<hr/>			<hr/>		
			200	6	0	165	2	----	115	0	0
			1	3	0	6	0	----	16	0	0
			2	2	0	7	0	----	17	0	0
			3	3	0	8	0	----	18	1	0
			4	1	0	9	0	----	19	0	0
			<hr/>			<hr/>			<hr/>		
			205	1	0	Total	84	74	120	----	0
			6	0	0				1	----	1
			7	2	1				2	----	0
			8	0	0				3	----	0
			9	0	0				4	----	2
			<hr/>			<hr/>			<hr/>		
			210	1	----				125	----	1
			<hr/>			<hr/>			<hr/>		
			Total	84	74				Total	84	74

9. FACE WIDTH			10. BIGONIAL			11. FACE HEIGHT			12. NOSE HEIGHT				
Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female		
125	....	0	90	0	1	90	....	0	35	....	0
6	....	0	1	0	1	1	....	0	6	....	0
7	....	2	2	0	2	2	....	1	7	....	0
8	....	1	3	0	2	3	....	0	8	....	0
9	....	4	4	1	1	4	....	0	9	....	1
<hr/>			<hr/>			<hr/>			<hr/>				
130	1	7	95	1	1	95	....	0	40	0	0	
1	0	0	6	0	1	6	....	0	1	0	4	
2	0	5	7	0	1	7	....	0	2	1	3	
3	2	7	8	1	2	8	....	0	3	0	4	
4	0	6	9	0	3	9	....	0	4	0	4	
<hr/>			<hr/>			<hr/>			<hr/>				
135	2	4	100	2	7	100	0	0	45	1	2		
6	0	8	1	0	2	1	0	2	6	1	7		
7	6	6	2	3	6	2	0	0	7	3	3		
8	3	8	3	2	10	3	1	2	8	4	7		
9	2	2	4	1	1	4	0	3	9	6	2		
<hr/>			<hr/>			<hr/>			<hr/>				
140	11	3	105	5	7	105	0	3	50	7	9		
1	3	3	6	4	4	6	0	1	1	9	9		
2	5	4	7	5	3	7	0	2	2	7	5		
3	8	1	8	6	3	8	0	1	3	6	7		
4	5	2	9	1	1	9	0	1	4	8	2		
<hr/>			<hr/>			<hr/>			<hr/>				
145	9	0	110	13	3	110	4	6	55	8	1		
6	7	0	11	4	1	11	2	1	6	2	1		
7	7	0	12	6	2	12	0	3	7	9	1		
8	3	0	13	4	2	13	0	1	8	6	1		
9	3	1	14	6	1	14	2	6	9	2	1		
<hr/>			<hr/>			<hr/>			<hr/>				
150	3	....	115	6	1	115	1	2	60	1	....	
1	0	....	16	2	....	16	1	9	1	2	....	
2	1	....	17	2	....	17	3	8	2	1	....	
3	1	....	18	1	....	18	4	5	3	0	....	
4	0	....	19	1	....	19	1	0	4	0	....	
<hr/>			<hr/>			<hr/>			<hr/>				
155	1	....	120	0	....	120	6	1	Total	84	74
6	0	....	1	1	....	1	3	4			
7	1	....	2	0	....	2	4	2			
8	0	....	3	0	....	3	4	3			
9	0	....	4	0	....	4	5	2			
<hr/>			<hr/>			<hr/>						<hr/>	
Total	84	74	Total	78	69	125	2	2					
						6	6	0					
						7	5	1					
						8	1	0					
						9	5	1					
						<hr/>							
						130	4	0					
						1	5	0					
						2	2	0					
						3	3	1					
						4	2	0					
						<hr/>							
						135	2	0					
						6	0	0					
						7	0	....				
						8	1	....				
						9	1	....				
						<hr/>							
						140	1	....				
						<hr/>							
						Total	81	74					

13. NOSE WIDTH			14. EAR HEIGHT			15. EAR WIDTH			16. RELATIVE SHOULDER HEIGHT		
Millimeters	Male	Female	Millimeters	Male	Female	Millimeters	Male	Female	Index	Male	Female
30	....	0	50	....	0	20	0	0	75	0	0
1	....	0	1	....	0	1	0	0	6	0	0
2	....	1	2	....	0	2	0	1	7	0	0
3	....	0	3	....	0	3	1	1	8	1	0
4	....	0	4	....	2	4	0	0	9	0	1
<hr/>			<hr/>			<hr/>			<hr/>		
35	0	1	55	0	2	25	0	0	80	4	4
6	0	3	6	0	1	6	2	4	1	4	6
7	0	1	7	0	2	7	0	5	2	18	14
8	3	12	8	1	4	8	2	1	3	18	19
9	4	7	9	1	2	9	2	6	4	21	17
<hr/>			<hr/>			<hr/>			<hr/>		
40	6	17	60	4	8	30	5	12	85	9	4
1	12	6	1	2	12	1	16	11	6	1	6
2	8	15	2	3	4	2	12	5	7	0	0
3	16	2	3	6	5	3	20	11	8	1	0
4	7	2	4	7	5	4	7	7	9	0	0
<hr/>			<hr/>			<hr/>			<hr/>		
45	9	4	65	9	2	35	5	4	90	0	....
6	7	2	6	9	3	6	0	3	1	1	....
7	5	0	7	6	6	7	7	1	Total		
8	4	0	8	10	3	8	1	1			
9	2	0	9	6	6	9	2	1	78	71	....
<hr/>			<hr/>			<hr/>			<hr/>		
50	....	1	70	4	1	40	1	....		
1	....	0	1	4	3	1	0	....		
2	....	0	2	2	1	2	0	....		
3	....	0	3	2	0	3	1	....		
4	....	0	4	2	1	4	0	....		
<hr/>			<hr/>			<hr/>			<hr/>		
Total	83	74	75	1	....	Total	84	74			
			6	1	....					
			7	1	....					
			8	1	....					
			9	1	....					
			<hr/>			<hr/>					
			80	1	....					
			<hr/>			<hr/>					
			Total	84	73						

17. RELATIVE SITTING HEIGHT			18. RELATIVE ARM LENGTH			19. RELATIVE ARM REACH			20. CEPHALIC INDEX		
Index	Male	Female	Index	Male	Female	Index	Male	Female	Index	Male	Female
35	0	....	35	....	0	90	0	0	70	0	0
6	0	....	6	....	0	1	0	0	1	0	0
7	0	....	7	....	0	2	0	0	2	2	0
8	0	....	8	....	1	3	0	1	3	2	0
9	1	....	9	....	0	4	1	0	4	4	1
—	—	—	—	—	—	—	—	—	—	—	—
40	0	....	40	0	0	95	0	1	75	1	2
1	0	....	1	0	0	6	1	2	6	9	1
2	0	....	2	2	3	7	0	1	7	9	5
3	0	....	3	1	4	8	0	9	8	10	3
4	1	....	4	3	11	9	1	14	9	4	6
—	—	—	—	—	—	—	—	—	—	—	—
45	0	0	45	8	14	100	5	6	80	10	8
6	1	0	6	14	13	1	6	10	1	11	10
7	0	1	7	19	4	2	12	9	2	10	7
8	4	0	8	11	6	3	11	5	3	1	6
9	5	3	9	6	1	4	8	5	4	4	8
—	—	—	—	—	—	—	—	—	—	—	—
50	8	5	50	0	....	105	13	1	85	1	2
1	14	11	1	1	....	6	7	2	6	4	7
2	27	17	2	0	....	7	7	2	7	1	5
3	12	10	3	0	....	8	3	2	8	1	3
4	4	11	4	0	....	9	0	....	9	....	....
—	—	—	—	—	—	—	—	—	—	—	—
55	1	8	55	2	....	110	2	....	90	....	0
6	1	2	6	....	....	11	0	....	1	....	1
7	....	0	7	....	....	12	0	....	2	....	0
8	....	2	8	....	....	13	0	....	3	....	0
9	....	0	9	....	....	14	1	....	4	....	0
—	—	—	—	—	—	—	—	—	—	—	—
Total	79	70	Total	67	57	Total	78	70	Total	84	74

21. FRONTO-PARIETAL			22. CEPHALO-FACIAL			23. ZYGOMATICO-FRONTAL			24. ZYGOMATICO-MANDIBULAR		
Index	Male	Female	Index	Male	Female	Index	Male	Female	Index	Male	Female
55	0	....	80	....	....	60	0	....	65	0	1
6	0	....	1	....	....	1	1	....	6	0	0
7	0	....	2	....	....	2	1	....	7	0	0
8	1	....	3	....	....	3	0	....	8	3	1
9	0	....	4	1	3	4	0	....	9	0	2
60	1	1	85	0	4	65	1	0	70	3	1
1	1	1	6	0	3	6	2	1	1	3	0
2	1	3	7	2	2	7	4	1	2	2	4
3	4	4	8	2	9	8	7	1	3	4	3
4	10	1	9	3	7	9	4	0	4	5	5
65	12	8	90	7	10	70	6	3	75	3	13
6	7	10	1	3	9	1	13	8	6	19	14
7	8	14	2	8	11	2	11	6	7	8	5
8	10	10	3	13	5	3	12	8	8	10	6
9	7	7	4	13	3	4	6	10	9	6	5
70	8	1	95	14	5	75	1	9	80	7	6
1	3	4	6	5	2	6	6	5	1	2	1
2	4	0	7	7	1	7	2	7	2	1	1
3	1	1	8	3	0	8	1	2	3	3	2
4	2	1	9	0	0	9	3	1	4	0	0
75	0	1	100	1	....	80	0	1	85	2	....
6	2	0	1	0	....	1	0	2	6	0	....
7	1	1	2	2	....	2	0	1	7	0	....
6	0	1	3	0	....	3	2	1	8	1	....
9	1	2	4	0	....	4	0	1	9	1	....
80	....	2	Total	84	74	85	0	1	Total	83	70
1	....	1				6	0	0			
2	....	0				7	0	2			
3	....	0				8	0	1			
4	....	0				9	0	1			
Total	84	74				90	0	0			
						1	1	1			
						2	0	0			
						3	0	0			
						4	0	0			
						Total	84	74			

25. FACIAL INDEX			26. NASAL INDEX			27. EAR INDEX		
Index	Male	Female	Index	Male	Female	Index	Male	Female
65	....	0	60	0	1	35	0	....
6	....	0	1	0	0	6	0	....
7	....	0	2	0	0	7	0	....
8	....	0	3	1	0	8	1	1
9	....	1	4	0	0	9	0	1
<hr/>			<hr/>			<hr/>		
70	0	0	65	0	0	40	4	0
1	0	0	6	1	1	1	1	0
2	1	0	7	0	0	2	4	3
3	0	0	8	1	0	3	1	7
4	1	0	9	0	1	4	2	0
<hr/>			<hr/>			<hr/>		
75	2	2	70	0	1	45	4	4
6	1	1	1	1	3	6	8	4
7	0	3	2	2	0	7	5	2
8	3	3	3	1	0	8	11	11
9	2	4	4	4	4	9	8	2
<hr/>			<hr/>			<hr/>		
80	2	3	75	3	2	50	6	3
1	4	5	6	5	4	1	5	5
2	1	7	7	4	3	2	7	7
3	1	5	8	9	5	3	4	5
4	4	1	9	5	4	4	2	7
<hr/>			<hr/>			<hr/>		
85	6	4	80	3	4	55	4	1
6	2	3	1	4	2	6	1	4
7	6	6	2	4	1	7	3	4
8	2	10	3	4	2	8	1	2
9	9	0	4	3	1	9	1	0
<hr/>			<hr/>			<hr/>		
90	5	2	85	3	2	60	0	....
1	5	2	6	5	5	1	0	....
2	7	5	7	2	2	2	0	....
3	2	2	8	6	4	3	0	....
4	4	2	9	2	1	<hr/>		
<hr/>			<hr/>			4	1	....
95	1	0	90	1	3	<hr/>		
6	3	0	1	0	3	Total	84	73
7	1	0	2	0	0	<hr/>		
8	0	2	3	0	3	<hr/>		
9	0	0	4	2	2	<hr/>		
<hr/>			<hr/>			<hr/>		
Total	77	73	95	0	3	<hr/>		
<hr/>			6	3	1	<hr/>		
<hr/>			7	0	0	<hr/>		
<hr/>			8	2	3	<hr/>		
<hr/>			9	0	0	<hr/>		
<hr/>			<hr/>			<hr/>		
<hr/>			100	1	1	<hr/>		
<hr/>			1	0	0	<hr/>		
<hr/>			2	0	1	<hr/>		
<hr/>			3	0	0	<hr/>		
<hr/>			4	0	0	<hr/>		
<hr/>			<hr/>			<hr/>		
<hr/>			105	0	0	<hr/>		
<hr/>			6	0	0	<hr/>		
<hr/>			7	1	0	<hr/>		
<hr/>			8	0	1	<hr/>		
<hr/>			<hr/>			<hr/>		
<hr/>			Total	83	74	<hr/>		

TABLE III.—SUMMARY OF ANTHROPOMETRIC CHARACTERS OF MARQUESANS

CHARACTER	MALE				FEMALE			
	79 persons				73 persons			
	Average	S. D.	V	E ^a	Average	S. D.	V	E
1. Stature	170.3	5.12	3.00	.58	160.7	5.11	3.20	.60
2. Shoulder height.....	141.6	4.83	3.40	.55	133.7	4.97	3.70	.59
3. Arm length.....	79.6	4.12	5.17	.50	72.5	4.05	5.50	.54
4. Arm reach.....	176.7	7.05	4.00	.80	162.6	7.04	4.32	.84
5. Sitting height.....	87.4	4.54	5.20	.51	84.5	3.41	4.00	.41
6. Head length.....	193.2	7.00	3.60	.76	183.2	6.77	3.70	.79
7. Head width.....	153.2	4.87	3.20	.53	150.1	3.98	2.70	.46
8. Minimum frontal.....	103.2	5.19	5.00	.57	102.1	7.10	7.00	.82
9. Face width.....	143.2	4.88	3.40	.53	135.5	4.50	3.30	.52
10. Bigonial	109.5	5.23	4.80	.59	103.0	5.67	5.50	.68
11. Face height.....	124.1	7.30	5.80	.80	114.5	7.28	6.40	.85
12. Nose height.....	53.1	3.97	7.50	.43	48.6	4.40	9.00	.51
13. Nose width.....	43.2	2.70	6.20	.30	40.4	2.80	6.90	.33
14. Ear height.....	67.1	4.53	6.80	.49	62.7	5.99	9.60	.70
15. Ear width.....	32.7	3.05	9.30	.33	31.2	3.22	10.30	.37
16. Relative shoulder height.....	83.2	1.78	2.10	.20	83.0	1.58	1.90	.19
17. Relative sitting height.....	51.2	2.33	4.60	.26	52.6	2.03	3.90	.24
18. Relative arm length.....	46.8	2.17	4.63	.26	45.1	1.88	4.20	.25
19. Relative arm reach.....	103.8	3.00	2.90	.34	100.8	2.90	2.90	.35
20. Cephalic index.....	79.4	3.52	4.40	.38	82.0	3.66	4.50	.42
21. Fronto-parietal index.....	67.4	3.75	5.60	.41	68.0	4.50	6.60	.52
22. Cephalo-facial index.....	93.5	3.13	3.30	.34	90.3	3.08	3.40	.36
23. Zygomatico-frontal index....	72.0	4.37	6.06	.48	75.2	5.06	6.70	.59
24. Zygomatico-mandibular index	76.8	4.02	5.20	.44	75.9	3.32	4.40	.40
25. Facial index.....	87.0	6.17	7.10	.70	84.7	5.69	6.70	.67
26. Nasal index.....	81.9	7.75	9.50	.85	83.6	9.17	10.90	1.07
27. Ear index.....	48.9	4.82	9.90	.52	49.6	4.83	9.70	.56

^a In this table E = probable error of the average. S. D. = standard deviation, and V = coefficient of variation in percentage.

TABLE IV.—SUMMARY OF THE ATTRIBUTE CHARACTERS OF THE MARQUESANS

CHARACTER	MALE		FEMALE	
	Number	Per cent	Number	Per cent
Hair form:				
Straight	25	30.5	19	25.7
Low waves.....	26	31.7	26	35.1
Deep waves.....	5	6.1	9	12.2
Curly	22	6.8	14	18.9
Frizzly	4	4.9	5	6.8
Woolly	0	.0	1	1.3
Totals	82	....	74	....
Hair color:				
Black ^a	70	87.5	53	84.2
Dark brown.....	5	6.3	4	6.3
Reddish brown.....	3	3.8	6	9.5
Light brown.....	0	.0	0	.0
Blond	0	.0	0	.0
Golden	0	.0	0	.0
Red	0	.0	0	.0
Gray	2	2.4	0	.0
Totals	80		63	
Beard; upper cheek:				
None	4	5.1	....	....
Scant	49	62.0	....	....
Medium	16	20.3	....	....
Heavy	10	12.6	....	....
Totals	79			
Beard; lower cheek:				
None	40	49.4	....	....
Scant	24	29.6	....	....
Medium	13	16.0	....	....
Heavy	4	5.0	....	....
Totals	81			
Beard; chin:				
None	4	5.1	....	....
Scant	49	62.0	....	....
Medium	16	20.5	....	....
Heavy	10	12.6	....	....
Totals	79			

^a Many showed a reddish-brown tint in certain lights.

CHARACTER	MALE		FEMALE	
	Number	Per cent	Number	Per cent
Hair on chest:				
None	50	65.8	....	....
Scant	16	21.0	....	....
Medium	5	6.6	....	....
Heavy	5	6.6	....	....
Totals	76			
Hair on forearm:				
None	39	48.2	....	....
Scant	23	28.4	....	....
Medium	12	14.8	....	....
Heavy	7	8.6	....	....
Totals	81			
Hair on legs:				
None	15	19.0	....	....
Scant	42	55.2	....	....
Medium	14	17.7	....	....
Heavy	8	10.1	....	....
Totals	79			
Eye color:				
Black	2	1.2	0	.0
Dark brown.....	76	91.6	67	90.5
Blue	6	7.2	7	9.5
Gray	0	.0	0	.0
Blue-brown	0	.0	0	.0
Gray-brown	0	.0	0	.0
Totals	84		74	
Conjunctiva:				
Clear	8	10.3	23	31.1
Not clear	70	89.7	51	68.9
Totals	78		74	
Epicanthic eye fold:				
Absent	18	21.7	15	20.3
Trace	46	55.4	30	40.5
Medium	16	19.3	21	28.4
Marked	3	3.6	6	10.8
Totals	83		74	

CHARACTER	MALE		FEMALE	
Nasal bridge:	Number	Per cent	Number	Per cent
Low	13	15.5	40	54.8
Medium	66	78.5	31	42.5
High	5	6.0	2	2.7
Totals	84		73	
Axes of nostrils:	Number	Per cent	Number	Per cent
Anterior-posterior	4	4.8	1	1.4
Oblique	42	50.6	27	37.0
Transverse	37	44.6	45	51.6
Totals	83		73	
Slope of forehead:	Number	Per cent	Number	Per cent
Vertical	8	9.6	24	32.9
Moderate	70	84.3	49	67.1
Low	5	6.1	9	12.0
Totals	83		73	
Glabella:	Number	Per cent	Number	Per cent
Smooth	12	14.8	57	78.1
Medium	44	54.3	14	19.2
Prominent	25	30.9	2	2.7
Totals	81		73	
Lips:	Number	Per cent	Number	Per cent
Thin	7	8.4	8	10.8
Medium	54	65.1	48	64.9
Thick	22	26.5	18	24.3
Totals	83		74	
Prognathism:	Number	Per cent	Number	Per cent
None	79	98.8	66	90.4
Slight	0	.0	1	1.4
Medium	1	1.2	6	8.2
Marked	0	.0	0	.0
Totals	80		73	
Keilodonty:	Number	Per cent	Number	Per cent
Lateral incisor teeth:				
No rim	42	61.8	44	81.5
Trace of rim	16	23.5	6	14.8
Medium rim	10	14.7	2	3.7
Marked rim	—	—	—	—
Totals	68		54	

CHARACTER	MALE		FEMALE	
Mesial incisor teeth:	Number	Per cent	Number	Per cent
No rim.....	39	59.1	41	75.9
Trace of rim.....	16	24.2	9	16.7
Medium rim.....	11	16.7	4	7.4
Marked rim.....	—	—	—	—
Totals	66		54	
<hr/>				
Number of cusps on lower second molar:				
Right:	Number	Per cent	Number	Per cent
Four cusps.....	17	23.9	20	33.9
Five cusps.....	54	76.1	39	66.1
Totals	71		59	
<hr/>				
Number of cusps on lower second molar:				
Left:	Number	Per cent	Number	Per cent
Four cusps	16	22.5	17	30.4
Five cusps	55	77.5	39	69.6
Totals	71		56	
<hr/>				
Ear lobe:	Number	Per cent	Number	Per cent
None	1	1.2	0	.0
Small separate.....	8	9.6	5	6.8
Small attached.....	47	56.7	32	43.2
Large separate.....	9	10.8	10	13.5
Large attached.....	18	21.7	27	36.5
Totals	83		74	
<hr/>				
Helix roll:	Number	Per cent	Number	Per cent
Flat	0	.0	0	.0
Rolled first third.....	20	23.8	13	17.6
Rolled first two-thirds.....	62	73.8	57	77.0
Rolled throughout.....	2	2.4	4	5.4
Totals	84		74	
<hr/>				
Darwin's tubercle:	Number	Per cent	Number	Per cent
Present	3	4.8	0	.0

In form the hair is typically not straight. It is either low waved or deeply waved (or curly according to the classification in this paper). It is black or dark brown in color. As elsewhere in Polynesia, there is a reddish tint near the end in certain lights. Only by the greatest stretch of the imagination can this be called blond. Some Marquesans have a dirty reddish or rusty brown hair that looks dry and dead. Often this reddish-brown hair appears in streaks.

The beard is for the most part confined to the chin. Some of the Marquesans grow a dense moustache. Body hair is not abundant. It is better developed on the legs than on the arms or chest. There are a large number of nearly glabrous individuals. While I have expressed hairiness in terms of amount, in the light of Trotter's⁵ findings it would be preferable to express it in terms of degree of development.

The eyes are dark brown in color, the conjunctiva not clear. It is dull, yellowish, or bloodshot in a large number of individuals. The eye fold is not well developed. The eye opening varies from the wide-open to the narrow obliquely placed eye-slits with a trace of a fold. The nasal bridge is of moderate elevation. Many Marquesans have nostrils transversely placed. These features have been discussed in detail and illustrated in my paper on Tonga.⁶

The glabella is well developed in the men. The lips are of average thickness or well above. The enamel rim on the upper incisor teeth is of very moderate frequency.

The significance of these various physical characters may perhaps best be shown by describing the Marquesans in terms of the Samoans and Tongans and to some extent in terms of the Maoris of New Zealand.

⁵ Trotter, Mildred. A study of facial hair in the white and negro races: Washington Univ. Studies, vol. ix, Sci. Ser. No. 2, pp. 273-289, 1922.

⁶ Bernice P. Bishop Mus. Mem. vol. viii, No. 4.

GENERAL COMPARISON OF MARQUESANS WITH SAMOANS
AND TONGANS

The Bayard Dominick Expedition has furnished the comparative data from Samoa and Tonga. For New Zealand a unique and important contribution to somatology is that of Te Rangi Hiroa, a Maori, who has recently begun to publish in serial form a careful and thoroughly scientific study of his race. The first number,⁷ dealing with skin color, hair form and color, eye color, weight, and stature has already appeared. Judging from this there is every reason to expect that the completed work will form one of the most important contributions to somatology.

Although skin color is of great interest the observations upon this character were most unsatisfactory. All of the observers complained that Fritsch's standard was not adapted to the study of the Polynesians. From my own experience with it I can sympathize with them. Furthermore the Fritsch standard is not expressed in numbers and I gave to the standards arbitrary numbers of my own. As the Fritsch chart is little known and to give the results in terms of it would be useless, it became necessary to translate these results into the terms of von Luschan's scale. I did this as best I could, but found it necessary to use two numbers in many instances. In order that there might be no personal peculiarities in the results I later asked four of the men engaged in these studies to match Fritsch's scale with von Luschan's scale. Here again great differences of judgment were shown by observers in the field. In view of this it seems best to state the results of skin color as a mere approximation. Two numbers were most frequently used—numbers 10 and 18 for unexposed skin color. Translated into terms of von Luschan's scale 10 was variously given as 6, 11, 12, 13, 14, 15. Number 18 is much darker and approaches 17, 18, or 22, 23, 24 of von Luschan's scale. For Tonga and Samoa Gifford and McKern most often reported 10 as the skin color for men. Handy gives 10 and 18 in about equal proportions. This would indicate that the Marquesans were considerably darker than the Samoans and Tongans. For exposed skin, however, no such differences occur. The Tongans, Samoans, and Marquesans are very similar. Buck's studies on the Maoris seem to indicate that they are also somewhat darker than the Samoans and the Tongans.

From Table V it will be noted that the Marquesans have more wavy hair than either the Samoans or the Tongans. Some of the difference may be accounted for by differences in standards of observation. This is true particularly of the curly hair of the Marquesans. (See p. 144.) But it seems fairly

⁷ Hiroa, Te Rangi (P. H. Buck), Maori somatology: *Journ. Polynesian Soc.*, vol. xxxi, No. 2, 1922.

certain that there is less straight hair in the Marquesans than in Samoa or Tonga. In Samoa and Tonga reddish-brown hair was reported, but its presence was somewhat discounted by the fact that a custom of bleaching by the use of lime was reported. Handy found a fairly high percentage of reddish-brown hair in the Marquesas, but no such process to account for it. On this point he says:⁸

You will note that we have frequently marked hair color both black and reddish-brown. This indicates hair of the type that is almost universal with them, which appears to be black unless one sees it so that the light comes through it, when it is seen to have a strong auburn or reddish-brown tinge. I have never found any evidences of the custom of bleaching hair in the Marquesas neither in modern nor in ancient times. There was formerly a bleaching of the skin, but this is not practised now. I am convinced that this russet color in the hair was indigenous to the Marquesans before the coming of the early explorers.

This reddish tint of the hair has been the basis for much discussion and speculation. It has been attributed to intentional bleaching, to the natural bleaching effect of sunlight and salt water or both, to intermixture with the whites, or more often as evidence of a Nordic origin of the Polynesians as a whole. Speaking of hair color Buck⁹ says:

The general colour is black, but brown and reddish hair occur. Certain tribes have been stated to have had more than their share of red hair, and in these tribes it is said to occur in certain families. . . . Although amongst the Maoris the confusion in colour caused by the Samoan and Tongan custom of liming the hair, does not exist, yet owing to the admixture of white blood, great care has to be exercised in recording cases of red or brown hair as being full Maori. . . . There was only one case in the whole series (760 men) of reddish brown hair and that was in a full Maori. Contrary to expectations, his skin color was 18 on von Luschan's scale (18 is the darker prevailing color of the Maori).

In Hawaii the reddish-brown hair under discussion is often found. I have seen in Hawaii thousands of mixed-bloods no one of whom had exactly this type of hair. I can confirm Doctor Buck's statement that it occurs in family groups. In two families studied it had persisted for three generations at least. As a rule it does not seem to be accompanied by a diminution of iris pigment or skin pigment. In only one family was it accompanied by weak eyes and in that only in the younger members of the family. It occurs in both sexes. Reddish-brown hair apparently occurs throughout Polynesia and I have seen the same type of hair in Chinese and Japanese who otherwise were typical members of their race. While the condition is interesting and important it should not be allowed to have too much influence on the imagination. I recommend Doctor Buck's paper for interesting comments on the Maori vocabulary and tradition dealing with hair color, hair form, and skin pigment.

⁸ Personal communication.

⁹ *Op. cit.*

TABLE V. COMPARISON OF ATTRIBUTE CHARACTERS IN SAMOANS, TONGANS, AND MARQUESANS ON A PERCENTAGE BASIS

CHARACTER	MALE			FEMALE		
	Samoa	Tongan	Marquesan	Samoa	Tongan	Marquesan
Hair form:						
Straight	55.1	41.5	30.5	47.8	34.4	25.7
Low waves	27.5	41.5	31.7	39.1	46.9	35.1
Deep waves	10.1	14.4	6.1	8.8	12.5	12.2
Curly	5.8	2.5	26.8	0	5.2	18.9
Frizzly	1.4	0	4.9	4.3	1.0	6.8
Woolly	0	0	0	0	0	1.3
Hair color:						
Black	91.4	94.1	87.5	56.9	87.6	84.2
Dark brown	4.3	4.2	6.3	8.8	4.1	6.3
Reddish brown	4.2 ^a	1.6 ^a	3.8	34.7 ^a	7.2 ^a	9.5
MALES ONLY						
Development of hair:	UPPER CHEEK			CHEST		
None	10.1	2.1	63.4	59.7	23.4	65.8
Scant	46.3	15.8	17.1	22.3	28.7	21.0
Medium	31.9	33.7	14.6	14.9	25.5	6.6
Heavy	11.5	48.4	4.9	3.0	22.3	6.6
	LOWER CHEEK			ARM		
None	14.5	4.2	49.4	3.0	0	48.2
Scant	43.3	37.2	29.6	19.1	10.5	28.4
Medium	23.2	18.1	16.0	35.3	43.2	14.8
Heavy	18.8	40.4	5.0	42.6	46.3	8.6
	CHIN			LEG		
None	0	0	5.1	0	0	19.0
Scant	23.2	19.4	62.0	7.2	7.3	53.2
Medium	27.5	30.6	20.3	42.0	66.7	17.7
Heavy	49.2	50.0	12.6	50.7	26.0	10.1
Nasal bridge	MALE			FEMALE		
Low	21.4	21.7	15.5	56.9	30.5	54.8
Medium	64.3	70.4	78.5	39.1	67.4	42.5
High	14.3	7.8	6.0	4.3	2.1	2.7
Axes of nostrils						
Antero	2.9	1.7	4.8	0	5.3	1.4
Oblique	57.3	78.3	50.6	39.1	69.5	37.0
Transverse	39.7	20.0	44.6	60.9	25.3	61.6
Keilodonty						
Lateral incisors { No rim	51.5	42.1	59.1	57.1	36.3	75.9
{ Trace	34.3	42.9	24.2	23.8	40.6	16.7
{ Marked	14.1	14.9	16.7	19.0	23.1	7.4
Mesial incisors { No rim	68.2	57.9	61.8	76.0	62.6	81.5
{ Trace	25.7	29.8	23.5	14.3	26.4	14.8
{ Marked	6.0	12.3	14.7	9.5	10.4	3.7

^a Said to be bleached with lime.

TABLE VI. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SAMOANS, TONGANS, AND MARQUESANS

CHARACTER	MALE			FEMALE		
	Samoa	Tongan	Marquesan	Samoa	Tongan	Marquesan
1. Stature	171.7	173.0	170.3	161.2	162.5	160.7
2. Head length	190.6	191.0	193.2	183.0	184.1	183.2
3. Head width	154.8	154.8	153.2	148.1	150.0	150.1
4. Minimum frontal	103.4	104.8	103.2	101.5	103.0	102.1
5. Face width	145.9	143.5	143.2	136.5	136.1	135.5
6. Bigonial diameter	104.6	104.8	109.5	99.0	99.2	103.0
7. Face height.....	131.1	128.2	124.1	121.1	124.1	114.5
8. Nose height	59.8	57.5	53.1	54.3	56.7	48.6
9. Nose width	43.8	44.4	43.2	41.2	41.9	40.4
10. Ear height	66.1	66.0	67.1	61.2	64.5	62.7
11. Ear width	35.2	34.5	32.7	33.6	33.4	31.2
12. Cephalic index	81.3	81.1	79.4	80.8	81.6	82.0
13. Fronto-parietal index	66.8	67.6	67.4	68.8	68.7	68.0
14. Cephalo-facial index	94.2	92.8	93.5	92.4	91.2	90.3
15. Zygomatico-frontal index	70.9	73.1	72.0	74.5	75.4	75.2
16. Zygomatico-mandibular	71.7	73.2	76.8	72.5	72.5	75.9
17. Facial index	89.9	89.2	87.0	89.8	90.8	84.7
18. Nasal index	73.6	77.6	81.9	76.3	74.2	83.6
19. Ear index	53.3	52.4	48.9	54.9	51.8	49.6

If the results may be taken at their face value the Marquesans are a much more glabrous people than either the Samoans or Tongans. While again allowances must be made for different observers it seems impossible that such large differences can be wholly explained in this way. Transverse nostrils are also more frequent in the Marquesas. On the other hand, the incisor rim is somewhat less frequent.

In Table VI the anthropometric averages are given. The Marquesans are considerably shorter than the Tongans and a little shorter even than the Samoans. The average of this series is less than that given by Deniker. The Marquesan head is longer and narrower than the heads of the Samoans and Tongans, the face is narrower and lower. The bigonial diameter is much greater. The nose is slightly narrower but markedly lower. Such differences result of course in a slightly lower cephalic index (in the males only), a larger zygomatico-mandibular index, a smaller facial index, and a larger nasal index. Again, it is possible to account for these differences in part by differences in technique, but there will still be a residue that must be explained in another way.

In Table II attention has been called to the great irregularity in distribution. There is not only a great range but a most irregular distribution within that range. This condition is emphasized by the standard deviations and coefficients of variation recorded in Table VII and in Table VIII. The Marquesan males have a greater standard deviation than either the Samoan or Tongan in ten of nineteen

characters. In seven others they exceed the Samoans and in two others they exceed the Tongans. The excess in standard deviation for the females is in eleven of nineteen characters. In seven others they exceed the Samoans and in one other the Tongans. In both sexes the excess for facial index and nasal index is enormous. Practically the same excessive variability is revealed by the coefficients of variability. The Marquesan men have coefficients of variation greater than either the Samoans or Tongans in ten of nineteen characters. In five others they exceed the Samoans and in one other the Tongans. In the female series the excess of variation is even more accentuated. The Marquesan women are more variable than either the Samoans or Tongans in thirteen of nineteen characters and in five others they exceed the Samoans.

TABLE VII. COMPARISON OF THE STANDARD DEVIATIONS OF THE SAMOANS, TONGANS, AND MARQUESANS

CHARACTER	MALE			FEMALE		
	Samoan	Tongan	Marquesan	Samoan	Tongan	Marquesan
1. Stature	5.25	5.21	5.12	4.92	5.83	5.11
2. Head length	5.69	6.89	7.00	5.22	6.47	6.77
3. Head width	4.46	4.26	4.87	3.87	5.06	3.98
4. Minimum frontal	5.98	4.87	5.19	3.96	4.65	7.10
5. Face width	5.23	5.94	4.88	3.79	6.03	4.50
6. Bigonial	5.13	5.81	5.23	3.93	4.80	5.67
7. Face height	6.56	6.81	7.30	6.41	5.79	7.28
8. Nose height	3.64	3.91	3.97	4.53	3.75	4.40
9. Nose width	2.59	3.02	2.70	2.56	2.86	2.80
10. Ear height	4.23	4.57	4.53	3.33	3.97	5.99
11. Ear width	2.76	2.62	3.05	2.30	2.35	3.22
12. Cephalic index	3.53	3.14	3.52	2.98	4.09	3.66
13. Fronto-parietal index	3.30	3.51	3.75	3.12	3.22	4.50
14. Cephalo-facial index	2.84	4.68	3.13	2.63	3.23	3.08
15. Zygomatico-frontal index	3.55	4.23	4.37	3.34	3.33	5.06
16. Zygomatico-mandibular index	3.84	4.56	4.02	3.50	3.57	3.32
17. Facial index	4.87	4.43	6.17	5.03	4.32	5.69
18. Nasal index	5.86	7.58	7.75	7.99	6.15	9.17
19. Ear index	3.79	3.93	4.82	4.53	3.93	4.83

TABLE VIII. COMPARISON OF THE COEFFICIENTS OF VARIATION OF THE SAMOANS, TONGANS, AND MARQUESANS (IN PERCENTAGE)

CHARACTER	MALE			FEMALE		
	Samoaan	Tongan	Marquesan	Samoaan	Tongan	Marquesan
1. Stature	3.05	3.01	3.00	3.05	3.58	3.20
2. Head length	2.98	3.60	3.60	2.85	3.51	3.70
3. Head width	2.88	2.75	3.20	2.61	3.37	2.70
4. Minimum frontal	5.78	4.64	5.00	3.90	4.51	7.00
5. Face width	3.59	4.13	3.40	2.77	4.43	3.30
6. Bigonial	4.90	5.54	4.80	3.96	4.83	5.50
7. Face height	5.00	5.31	5.80	5.30	4.66	6.40
8. Nose height	6.09	6.80	7.50	8.34	6.61	9.00
9. Nose width	5.91	6.80	6.20	6.21	6.82	6.90
10. Ear height	6.39	6.92	6.80	5.44	6.15	9.60
11. Ear width	7.84	7.59	9.30	6.84	7.03	10.30
12. Cephalic index	4.34	3.87	4.40	3.68	5.01	4.50
13. Fronto-parietal index	4.94	5.19	5.60	4.54	4.68	6.60
14. Cephalo-facial index	3.01	5.04	3.30	2.84	3.54	3.40
15. Zygomatico-frontal index	5.01	5.78	6.06	4.49	4.41	6.70
16. Zygomatico-mandibular index	5.42	6.22	5.20	4.83	4.92	4.40
17. Facial index	5.42	4.96	7.10	5.60	4.75	6.70
18. Nasal index	7.96	9.76	9.50	10.47	8.28	10.90
19. Ear index	7.11	7.50	9.90	8.25	7.58	9.70

TABLE IX. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SOUTHEASTERN ISLANDS (GROUP I) AND OF THE NORTH WESTERN ISLANDS (GROUP II)

CHARACTER	45	39	30	43
	Group I	Group II	Group I	Group II
1. Stature	169.5	171.1	160.2	161.2
2. Shoulder height	142.2	141.7	134.5	133.1
3. Arm length	79.6	79.5	73.4	71.9
4. Sitting height	87.3	87.4	84.0	84.8
5. Arm reach	176.0	177.5	163.5	161.9
6. Head length	192.7	193.7	183.6	182.7
7. Head width	153.9	154.8	148.4	151.4
8. Minimum frontal	101.9	104.5	101.3	102.6
9. Face width	142.1	144.4	133.8	136.7
10. Bigonial	109.2	109.8	102.2	103.6
11. Face height	128.0	120.6	117.1	112.6
12. Nose height	53.8	52.2	50.6	47.3
13. Nose width	42.8	43.9	39.7	40.9
14. Ear height	67.1	67.0	62.9	62.5
15. Ear width	32.6	32.9	31.3	31.0
16. Relative shoulder height index.....	83.4	82.8	83.8	82.5
17. Relative arm length index.....	46.9	46.7	45.6	44.8

TABLE IX. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE SOUTHEASTERN ISLANDS (GROUP I) AND OF THE NORTHWESTERN ISLANDS (GROUP II)—CONTINUED

CHARACTER	MALE		FEMALE	
	Group I	Group II	Group I	Group II
18. Relative sitting height index.....	51.2	51.0	52.4	52.6
19. Relative arm reach index.....	103.8	103.8	101.5	100.3
20. Cephalic index	78.9	79.9	80.7	82.9
21. Fronto-parietal index	67.2	67.6	68.3	67.8
22. Cephalo-facial index	93.6	93.5	90.2	90.3
23. Zygomatico-frontal index	71.8	72.4	75.8	75.1
24. Zygomatico-mandibular index	76.9	76.6	76.4	75.6
25. Facial index	90.2	83.5	87.6	82.4
26. Nasal index	80.1	84.2	78.7	87.2
27. Ear index	48.8	49.1	51.0	49.7

TABLE X. COMPARISON OF ATTRIBUTE CHARACTERS OF THE SOUTHEASTERN ISLANDS (GROUP I) AND THE NORTHWESTERN ISLANDS (GROUP II)
(FREQUENCY IN PERCENTAGE)

CHARACTER	(44) MALE (38)	(31) FEMALE (43)		
	Group I	Group II	Group I	Group II
Hair form				
Straight	18.2	44.7	22.6	27.9
Low waves	43.2	18.5	45.2	27.9
Deep waves	9.1	2.6	9.7	13.9
Curly	29.5	23.7	16.1	23.3
Frizzly	0	10.5	6.4	4.7
Woolly	0	0	0	2.3
Axis of nostrils				
Antero-posterior	9.1	0	3.2	0
Oblique	54.5	46.2	54.9	23.8
Transverse	36.4	53.8	41.9	76.2
Keilodonty: Rim on mesial incisor				
Absent	45.0	80.8	68.2	81.3
Slight	32.5	11.5	22.7	12.5
Marked	22.5	7.7	9.1	6.2
Rim on lateral incisor				
Absent	50.0	80.8	71.5	87.9
Slight	31.0	11.5	19.0	12.1
Marked	19.0	7.7	9.5	0

INTER-ISLAND DIFFERENCES

In the seriation tables and the tables of standard deviations and coefficients of variation (Tables II, VII and VIII) there is evidence of non-homogeneity in this series. Handy suggests from observation and a study of his records shows that there are possibly inter-island differences in physical type correlated with differences in culture. From his own observation Handy concludes that the people of the island of Ua Pou have larger and rounder heads and faces and straighter hair; while the people of Fatu Hiva and Hiva Oa have smaller, longer heads and curlier hair. In this opinion he was confirmed by a settler who had been resident in the islands for about twelve years. Since the series is so small it will be necessary to group the islands in order to get series of dependable size. On this point Handy again helps out with the statement that cultural and traditional evidence points to the possibility of two different subdivisions within the island groups. Some evidence (language for example) points to the grouping of Nuku Hiva, Ua Pou and Ua Huka in one group and Hiva Oa, Tahu Ata, and Fatu Hiva in the other. On the other hand, other evidence (traditional, other linguistic, and also archaeological) groups the western half of Nuku Hiva, Ua Pou, and the western half of Hiva Oa with Tahu Ata and Fatu Hiva for one section and eastern Nuku Hiva, Ua Huka, and eastern Hiva Oa for the second section.

As the first grouping divides the material used for study into almost equal parts, it seems best to adopt it tentatively. Before dealing with the distribution of the differences it seems wise to determine the magnitude of these differences. The southeastern islands of Fatu Hiva, Tahu Ata, and Hiva Oa will be called for convenience Group I. The northwestern islands of Ua Pou, Ua Huku, and Nuku Hiva will be called Group II.

The results of such a grouping will be found in Table IX and Table X. In Group I the average stature is less, the minimum frontal diameter is less, the face width is smaller, the bigonial diameter is less, the face and also the nose is markedly higher, the nose is narrower, the relative shoulder height is greater, the cephalic index is smaller, the facial index is larger, and the nasal index is smaller. The other differences are contradictory in the two sexes. The results for hair form are also somewhat doubtful and contradictory. In Group I the hair of the men is somewhat more wavy but for the women the reverse is true. In Group I the axes of the nostrils are more often antero-posterior and oblique; in Group II they are more often transverse. The incisor rim is likewise more frequent in Group I.

Fourteen different colors were given as approaching the skin color of the Marquesans. These colors were arranged into a series of increasing pigmentation. The lightest in color was numbered one, the darkest was given a value of fourteen.

In this way it is possible to give an index of pigmentation for each island or group of islands. The smaller the number is the lighter is the skin color. The results are given in Table XI.

TABLE XI. INDEX OF RELATIVE PIGMENTATION OF THE SKIN BY ISLANDS AND GROUPS OF ISLANDS^a

Island	NUMBER		MALE		FEMALE	
	Male	Female	Unexposed	Exposed	Unexposed	Exposed
Fatu Hiva	12	1	7.1	9.0	7.5	4.5
Hiva Oa	33	29	6.2	6.1	5.2	6.3
Group I	45	31	6.9	6.9	5.3	6.2
Ua Pou	23	26	9.2	9.0	6.7	8.1
Ua Huku	7	10	10.9	9.4	9.0	8.7
Nuku Hiva	11	7	9.0	9.6	6.0	7.5
Group II	41	43	9.4	9.2	7.1	8.1
Total Group	86	74	7.8	8.0	6.4	7.3

The differences in pigmentation are very marked. The natives of Hiva Oa are the lightest while those of Ua Huku are darkest. All of the islands of Group I have a lower index of relative pigmentation than do the islands of Group II.

The inter-island differences, in addition to the other signs of variability, are indicative of a non-homogeneous group. The variability is too great and the inter-island differences too far reaching to be accounted for by mere local peculiarities. There is every indication that more than one physical type is under consideration. Since it is unlikely that the two types are isolated in the islands selected as a basis of subdivision and that the averages given represent not the mean of two pure physical types, but the mean of two or more physical types mixed in different proportions in the two groups of islands, it is probable that if the two types can be more specifically isolated the differences between them will be increased.

^a The smaller the number, the lighter is the skin color.

RECONSTRUCTION OF THE DIFFERENT PHYSICAL TYPES IN THE MARQUESAS

On first impression it might seem that the inter-island differences could be accepted as indicative of the characters of the two or more types in the islands. But when it is recalled that it is unlikely that these types exist in any great degree of purity, it will be seen that the differences cannot be taken literally. They are, however, useful in indicating the promising mode of attack in reconstructing the two types. The most marked differences are in the facial and nasal indices with less marked differences in stature, minimum frontal, face width, face height, bigonial diameter, nasal height and nasal width, hair form, axes of nostrils, and the incisor rim. In order to reconstruct the different physical types in the islands it becomes necessary to know how these differences are correlated in the individual. In what manner does a tall individual differ from a short individual? What other characters are associated with a long head, a broad nose, or a particular type of hair form?

CHARACTERS ASSOCIATED WITH HAIR FORM

Hair form is one of the most used criteria of race. If there is more than one type in the Marquesas it is important to know the characteristic hair forms of the different types. In order to determine what characters are associated with the different types of hair the material was subdivided into three groups. In Group I, have been placed all individuals with straight hair, in Group II all individuals with low waved hair, and in Group III all individuals with deeply waved, curly, or frizzly hair. If these types of hair form are merely normal variants around a median normal type and this group is a homogeneous racial group, selection on the basis of hair form should not affect the other characters. The averages of the characteristics of the straight-haired group should be the same or similar to those of the wavy-haired groups. If, on the other hand, the group is non-homogeneous and the different types of hair are indicative of different physical types, it is to be expected that the associated characteristics would be revealed in the averages. While hair form is specifically considered here, the same general principle with some slight modifications for correlated characters holds true for selection for other characters. (See p. 174.)

In Table XII and Table XIII the results of such hair form subdivision are given. On the whole the results are not very satisfactory. In some respects the results for the two sexes are so contradictory that it is impossible to know which series tells the truth. The only consistent differences that appear are as follows: in the straight-haired group the individuals are slightly shorter, their heads are larger, their bigonial diameters are less and their zygomatico-mandibular indices

are less; in the low-waved group the noses are higher and narrower and the nasal indices smaller and the incisor rim has a lower frequency; in the deeply waved group the bigonial diameters are larger, the face heights are smaller, the noses are lower and wider, the zygomatico-mandibular indices are higher, and there are fewer antero-posteriorly placed nostrils. The most far-reaching differences seem to be associated with the deeply-waved and curly hair. But the results are still indefinite on many important characters. It is clear that further subdivision will be necessary.

TABLE XII. COMPARISON OF THE ANTHROPOMETRIC AVERAGES OF THE THREE HAIR-FORM GROUPS

CHARACTER	MALE			FEMALE		
	Straight	Low Waved	Deep Waved	Straight	Low Waved	Deep Waved
1. Stature	169.6	170.6	170.2	160.3	161.2	160.6
2. Shoulder height	140.9	142.4	141.2	132.4	134.4	133.8
3. Arm length	79.8	79.5	79.3	71.0	72.6	73.4
4. Sitting height	85.9	88.1	88.2	85.3	84.0	84.4
5. Arm reach	177.3	176.8	175.8	161.7	163.6	162.3
6. Head length	194.4	193.4	192.0	184.5	183.8	181.7
7. Head width	154.2	152.7	153.2	150.9	150.5	148.9
8. Minimum frontal	103.4	102.0	104.0	101.8	102.8	101.6
9. Face width	144.4	142.9	142.5	133.7	137.0	135.3
10. Bigonial	108.7	109.3	110.4	100.7	103.3	103.9
11. Face height	122.2	127.8	124.1	115.4	115.3	113.1
12. Nose height	52.9	53.8	52.4	48.2	49.7	47.9
13. Nose width	43.4	42.9	43.3	40.7	40.6	41.3
14. Ear height	68.0	67.4	65.6	63.6	61.6	63.0
15. Ear width	32.5	32.9	32.7	31.0	31.2	31.1
16. Relative shoulder height index.....	83.0	83.5	82.9	82.3	83.3	83.2
17. Relative arm length	47.3	46.7	46.6	44.4	45.2	45.5
18. Relative sitting height	50.4	51.6	51.7	53.2	52.2	52.7
19. Relative arm reach	104.6	103.6	103.3	100.7	100.9	100.7
20. Cephalic index	79.2	79.0	80.0	81.9	82.2	81.9
21. Fronto-parietal index	67.2	67.1	67.9	67.6	68.2	68.2
22. Cephalo-facial index	93.7	93.6	93.1	88.7	90.8	90.9
23. Zygomatic-frontal index	71.6	71.5	73.1	76.4	75.1	75.1
24. Zygomatico-mandibular index	75.9	76.5	77.5	75.0	75.5	76.8
25. Facial index	84.8	89.9	86.9	85.9	84.6	83.8
26. Nasal index	82.4	80.4	83.2	84.8	81.8	84.5
27. Ear index	48.0	48.9	49.5	48.7	50.3	49.6

TABLE XIII. COMPARISON OF THE ATTRIBUTE CHARACTERS OF THE THREE HAIR FORM GROUPS (DISTRIBUTION IN PERCENTAGE)

	MALE			FEMALE		
	Straight	Low Waved	Deep Waved	Straight	Low Waved	Deep Waved
Direction of nostrils						
Antero-posterior	4.0	11.5	0	0	0	0
Oblique	40.0	61.5	50.0	36.8	60.0	20.7
Transverse	56.0	27.0	50.0	63.2	40.0	79.3
Keilodonty; enamel rim on lateral incisor						
Absent	55.6	74.0	53.8	81.3	86.6	78.3
Slight	33.3	13.0	26.9	12.5	6.7	21.7
Marked	11.1	13.0	19.3	6.2	6.7	0
Mesial incisor						
Absent	55.6	71.5	50.0	75.0	80.0	69.6
Slight	33.3	9.5	30.8	12.5	6.7	26.1
Marked	11.1	19.0	19.2	12.5	13.3	4.3

TABLE XIV. CHARACTERISTICS OF THE 23 TALLEST MEN

Catalog number	Stature	Minimum frontal	Face width	Bigonial	Face height	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek ^a
156	174	98	143	110	122	78.4	96.0	84.1	80.7	7	10
98	174	105	145	110	130	80.2	91.8	89.7	84.9	11	11
89	174	112	147	105	115	80.2	93.0	78.2	88.7	12	10
46	174	105	148	106	129	83.0	98.0	87.2	88.2	10	12
174	174	106	144	114	126	79.3	94.1	87.5	74.5	5	5
110	174	93	150	114	118	85.5	84.3	78.7	74.6	13	10
11	175	100	143	110	127	79.5	92.3	88.8	83.0	11	11
45	175	106	149	105	126	82.5	93.1	84.6	87.8	10	12
122	175	107	140	95	132	76.1	91.5	94.3	95.7	10	10
94	175	104	146	115	129	76.5	95.4	88.4	77.2	4	6
40	176	100	146	111	.....	75.9	94.8	.....	77.6	10	9
195	176	99	145	110	126	77.6	95.4	86.9	82.7	9	6
78	176	102	140	108	133	80.7	88.0	95.0	.....	10	10
36	176	99	140	.....	124	81.0	91.5	88.6	78.2	7	11
152	177	102	147	117	127	83.9	94.2	86.4	70.9	3	5
200	178	95	147	110	131	78.0	94.2	89.1	80.7	6	4
77	178	104	133	108	.....	81.0	.....	.....	78.4	12	6
9	178	105	146	113	110	82.2	90.1	75.3	88.5	11	11
68	178	111	146	111	118	79.0	94.8	80.8	93.9	10	6
17	178	100	148	114	132	77.5	95.5	89.2	75.9	12	11
201	179	105	145	115	133	76.5	94.8	91.7	69.9	8	7
166	180	103	143	110	131	80.8	94.1	91.6	77.4	10	11
27	184	113	152	115	120	86.3	92.7	79.0	86.0	12	10
Averages		103.2	144.9	110.3	125.7	80.1	93.6	86.4	81.3	9.2	8.8
Average of total series		103.2	143.2	109.5	124.1	79.4	93.5	87.0	81.9	7.8	8.0

^a The pigment number given in this and the following column is the relative pigment of the total series. The number ranges from 1 to 14. Number 1 is the lightest and number 14 is the darkest.

TABLE XV. CHARACTERISTICS OF THE 20 TALLEST WOMEN

Catalog number	Stature	Minimum frontal	Face width	Bigonial	Face height	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
61	164	102	141	107	116	83.1	92.8	82.3	93.5	7	10
64	165	103	138	100	121	82.5	88.5	87.7	78.4	5	5
67	165	105	137	103	123	83.1	90.1	89.8	71.2	7	6
102	165	100	138	104	112	73.8	95.8	81.2	90.2	6	6
51	165	91	138	101	110	81.3	93.2	79.7	88.4	6	10
181	165	95	135	103	104	86.0	91.8	77.0	89.1	4	6
117	166	102	142	114	123	80.2	97.3	87.2	88.0	9	10
87	166	124	149	110	124	83.5	94.9	83.2	77.4	4	7
33	166	103	134	101	117	83.9	88.7	87.3	93.8	11	10
38	166	101	142	106	110	81.2	91.0	77.5	93.3	6	9
161	166	103	138	105	121	83.5	87.9	87.7	70.4	5	4
145	166	102	136	100	125	79.1	91.9	91.9	70.6	5	5
59	167	105	141	92	133	81.0	81.6	94.3	90.9	4	10
48	167	100	134	102	117	81.4	89.9	87.3	80.0	10	11
160	168	113	138	110	117	77.0	93.9	84.8	78.4	4	10
91	169	113	135	105	113	81.8	88.2	83.7	88.2	4	6
63	169	101	139	108	122	80.5	93.3	87.8	97.6	5	10
171	169	100	135	93	111	78.5	92.5	82.2	69.2	4	6
49	170	105	134	100	117	75.0	91.2	87.3	95.4	10	7
151	174	104	137	106	117	79.2	90.1	85.4	78.4	4	5
Average		103.6	138.0	103.5	117.6	80.8	91.7	85.3	84.1	6.0	7.6
Average of total series		102.1	135.5	103.0	114.5	82.0	90.3	84.7	83.6	6.4	7.3

TABLE XVI. CHARACTERISTICS OF THE 21 SHORTEST MEN

Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
111	161	79.6	98.1	76.5	87.5	5	10
119	161	77.0	95.8	87.0	87.5	12	12
129	162	77.3	94.4	89.6	75.9	4	6
62	162	86.1	93.6	80.7	94.0	7	12
146	162	74.1	93.0	93.2	75.9	6	6
14	163	82.4	95.3	83.9	72.7	10	9
120	163	76.6	97.4	80.0	75.9	12	12
173	163	87.8	86.7	86.0	77.4	10	6
116	163	84.5	91.5	85.0	89.6	6	4
41	163	78.4	95.3	77.5	78.8	10	10

TABLE XVI. CHARACTERISTICS OF THE 21 SHORTEST MEN—CONTINUED

Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
193	164	85.4	90.1	92.0	87.8	6	6
125	164	81.9	89.0	.....	84.0	7	10
66	164	76.7	92.3	82.5	85.4	12	10
183	165	80.1	94.6	90.1	96.1	4	5
199	165	77.4	97.4	79.6	86.0	4	7
169	166	84.3	90.4	92.2	75.5	4	5
158	166	82.0	91.3	95.6	72.1	4	6
123	166	77.3	92.8	87.3	100.0	10	10
86	166	77.5	83.9	89.2	86.0	4	4
57	166	81.6	96.8	74.0	80.8	10	9
177	166	76.3	92.0	89.0	81.1	10	6
Average		80.2	92.9	85.5	83.3	7.5	7.9
Average total series		79.4	93.5	87.0	81.9	7.8	8.0

TABLE XVII. CHARACTERISTICS OF THE 20 SHORTEST WOMEN

Catalog number	Stature	Cephalic index	Cephalo-facial index	Facial index	Nasal index	Relative pigment arm	Relative pigment cheek
92	147	87.9	86.9	88.0	91.3	11	11
182	150	75.3	90.7	92.9	81.2	4	5
108	151	84.2	91.3	76.5	79.2	4	6
185	152	82.0	93.3	82.1	93.0	4	6
138	152	83.6	89.9	92.5	73.7	5	5
99	154	80.6	88.0	78.8	85.7	7	6
155	154	85.6	89.3	82.7	83.3	5	6
112	155	82.7	85.0	84.6	90.9	4	7
4	155	86.9	84.3	81.4	85.7	11	9
187	155	78.5	88.4	91.5	65.5	5	5
50	156	80.3	95.9	71.6	100.0	10	9
32	156	83.3	91.7	77.4	79.2	10	10
7	156	80.0	88.6	86.4	78.4	10	12
180	156	80.0	85.5	90.0	82.6	5	5
140	156	80.0	94.6	82.9	80.4	5	5
80	157	86.1	87.7	86.8	76.9	6	10
37	157	88.2	90.0	77.8	93.0	11	11
13	157	85.0	86.9	85.7	74.5	10	9
82	157	83.3	90.7	82.4	80.0	6	4
126	157	80.7	89.8	87.9	76.0	10	4
Average		82.7	89.4	83.9	82.5	7.1	6.8
Average total series		82.0	90.3	84.7	83.6	6.4	7.3

TABLE XVIII. AVERAGE CHARACTERISTICS OF STATURE GROUPS

	MEN			WOMEN		
	23 Tallest	Total	21 Shortest	20 Tallest	Total	20 Shortest
Cephalic index	80.1	79.4	80.2	80.8	82.0	82.7
Cephalo-facial index	93.6	93.5	92.9	91.7	90.3	89.4
Facial index	86.4	87.0	85.5	85.3	84.7	83.9
Nasal index	81.3	81.9	83.3	84.1	83.6	82.5
Arm pigment	9.2	7.8	7.5	6.0	6.4	7.1
Cheek pigment	8.8	8.0	7.9	7.6	7.3	6.8

CHARACTERS ASSOCIATED WITH STATURE

The Polynesians are always cited as among the tallest races of man. Their physique is extolled in all books of travel and early exploration. For this reason it is of special interest to know what other characters occur in association with tall stature. Likewise it will be of interest to know what characters are associated with short stature. I have selected a sufficiently large number of the tallest and shortest individuals to give some approach to a reliable or significant average and listed their characteristics in Tables XIV, XV, XVI, XVII, and XVIII. But the averages are based upon such small numbers that the characters of the individuals must be studied as well as the averages. One or two extremes might nullify the conclusions based on averages. As is to be expected, the tall men and women have greater absolute diameters such as face width and bigonial diameter. This is a natural normal correlation in all races of man and is not in itself indicative of racial heterogeneity. There is, however, no very great correlation between stature and the indices and proportions or between stature and the attribute characters in a homogeneous race group.

The characters associated with tall stature are very variable, especially in the women. In the male series the tallest men are markedly variable, but show a somewhat greater tendency to approach one type. A large number have heads somewhat longer than the average, a high facial index, and a small nasal index and with these characters is associated a lighter skin. But in the averages the other individuals in the series hide this fact. The average shows the men to have somewhat shorter heads than the total series, but longer than those of the shortest men. The cephalo-facial index is higher, the facial index is smaller, but somewhat greater than that of the shortest men, the nasal index is smaller and the skin slightly darker. The women have longer heads, higher faces, but wider noses than the total series. On the whole there does not seem to be a very close correlation between tall stature and the other characteristics studied.

In the series of shortest individuals the results are somewhat more clear and are in closer agreement in the two sexes. In a large number of individuals of both sexes short stature seems to be associated with short heads, smaller cephalo-facial indices, and lower faces. The nose character and pigmentation are different in the two sexes. Again, while the results indicate the non-homogeneity of the series, they do not show clearly just what in detail are the characteristics of the different types.

TABLE XIX. CHARACTERISTICS OF 18 MEN WITH THE LONGEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form ^a	Amount of hair ^b	Arm pigment	Cheek pigment
190	72.4	.....	91.2	75.4	1	3	6	4
109	72.4	169	83.9	83.6	4	6	10	12
141	72.9	172	92.5	78.2	1	4	11	6
134	73.4	171	96.6	81.5	2	1	6	6
146	74.1	162	93.2	75.9	2	3	6	6
65	74.3	172	84.8	84.6	1	3	10	7
170	74.4	168	87.1	80.4	2	5	4	4
5	74.5	171	84.9	78.8	4	1	11	10
100	75.1	170	91.8	76.9	1	2	11	10
147	75.6	170	84.8	86.0	4	10	4	6
154	75.9	.....	88.9	78.4	4	2	4	4
40	75.9	176	.....	77.6	1	15	10	9
122	76.1	175	94.3	95.7	2	2	10	10
118	76.2	169	88.6	89.4	4	5	4	10
177	76.3	166	89.0	81.1	3	6	10	6
12	76.4	173	82.0	82.7	1	1	6	7
201	76.5	179	91.7	62.9	2	2	8	7
94	76.5	175	88.4	77.2	2	3	4	6
Average		171.1	89.0	80.3	2.3	4.1	7.5	7.2
Average total series		170.3	87.0	81.9	2.4	5.3	7.8	8.0

^a Hair form is numbered consecutively from straight to woolly. A value of 1 is given to straight hair, 2 to low-waved hair, etc. The smaller the number, the straighter the hair or vice versa.

^b The hair is numbered in accordance with its abundance: none = 0, slight = 1, medium = 2, abundant = 3. It was observed in six places. The number in this column is the total of the observations. It may be as high as 18 in an individual.

TABLE XX. CHARACTERISTICS OF 17 WOMEN WITH LONGEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
102	73.8	165	81.2	90.2	4	6	6
49	75.0	170	87.3	95.4	1	10	7
182	75.3	150	92.9	81.2	3	4	5
127	76.0	159	90.8	90.2	2	4	7
172	76.8	160	94.2	77.4	2	5	5
26	76.9	163	75.4	90.0	1	10	9
160	77.0	168	84.8	78.4	4	4	10
81	77.1	163	87.7	84.0	1	4	6
75	77.3	163	80.9	97.6	2	4	5
139	78.1	.....	86.6	75.0	4	6	6
171	78.5	169	82.2	69.2	2	6	6
15	79.0	160	88.3	79.6	2	4	11
145	79.1	166	91.9	70.6	1	5	5
149	79.1	164	86.4	87.0	1	6	6
178	79.2	160	93.2	75.5	3	6	6
151	79.2	174	85.4	78.4	2	4	5
110	79.4	159	84.7	76.0	4	6	6
Average		163.3	86.7	82.1	2.3	5.5	6.5
Average of total series		160.7	84.7	83.6	2.5	6.4	7.3

TABLE XXI. CHARACTERISTICS OF THE 22 MEN WITH THE SHORTEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
159	81.6	172	84.1	68.4	3	2	4	6
57	81.6	166	74.0	80.8	2	11	10	9
28	81.8	173	75.3	97.8	3	2	11	11
125	81.9	164	85.4	84.0	1	6	7	10
168	81.9	170	92.1	71.9	2	4	5	6
158	82.0	166	95.6	72.1	3	3	4	6
29	82.1	168	85.2	82.0	1	2	10	10
9	82.2	178	75.3	88.5	1	0	11	11
14	82.4	163	83.9	72.7	1	11	10	9
45	82.5	175	84.6	87.8	1	1	10	12
46	83.0	174	87.2	88.2	5	4	10	12
152	83.9	177	86.4	70.9	2	6	3	5
107	84.0	172	85.2	62.4	4	3	11	10
169	84.3	166	92.2	75.5	4	4	4	5
116	84.5	163	85.0	89.6	1	3	6	4
193	85.4	164	92.0	87.8	2	0	6	6
110	85.5	174	78.7	74.6	2	0	13	12
2	85.6	173	81.4	97.8	4	3	11	9
62	86.1	162	80.7	94.0	1	1	7	12
27	86.3	184	79.0	86.0	4	2	12	10
179	87.1	167	85.4	79.6	4	2	4	4
173	87.8	163	86.0	77.4	2	4	10	6
Average		169.7	84.3	82.2	2.4	3.4	8.1	8.4
Average of total series		170.3	87.0	81.9	2.4	5.3	7.8	8.0

TABLE XXII. CHARACTERISTICS OF THE 19 WOMEN WITH THE SHORTEST HEADS

Catalog number	Cephalic index	Stature	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
136	84.8	160	87.7	79.2	2	4	6
13	85.0	157	85.7	74.5	3	10	10
155	85.6	154	82.7	85.3	2	5	6
1	85.6	160	79.8	87.5	1	11	9
30	86.0	160	80.2	85.7	4	4	6
3	86.0	161	82.9	85.7	1	4	9
181	86.0	165	77.0	89.1	2	4	6
22	86.1	159	81.8	95.4	1	6	10
80	86.1	157	86.8	76.9	3	6	10
44	86.9	158	77.5	95.1	3	10	7
4	86.9	156	81.4	85.7	1	11	9
68	87.2	161	75.4	107.7	5	10	9
6	87.4	158	77.4	85.1	2	9	10
150	87.4	158	88.5	74.5	2	1	2
92	87.9	147	88.0	91.3	1	11	11
21	88.2	161	68.7	86.4	6	10	10
37	88.2	167	77.8	93.0	3	11	11
19	88.7	164	79.2	75.0	2	10	9
97	91.3	160	80.6	80.8	2	10	9
Average		158.6	81.0	85.9	2.4	7.7	7.8
Average of total series		160.7	84.7	83.6	2.5	6.4	7.3

TABLE XXIII. AVERAGE CHARACTERISTICS OF HEAD FORM GROUPS

	18 MEN			WOMEN		
	Longest heads	Total series	Shortest heads	Longest heads	Total series	Shortest heads
Stature	171.1	170.3	169.7	163.3	160.7	158.6
Facial index	89.0	87.0	84.3	86.7	84.7	81.0
Nasal index	80.3	81.9	82.2	82.1	83.6	85.9
Hair form	2.3	2.4	2.4	2.3	2.5	2.4
Amount of hair	4.1	5.3	3.4	.....	.....	.....
Arm pigment	7.5	7.8	8.1	5.5	6.4	7.7
Cheek pigment	7.2	8.0	8.4	6.5	7.3	7.8

CHARACTERS ASSOCIATED WITH HEAD FORM

The cephalic index of Marquesans ranges from 72 to 91. This range of 20 points is rather high, but most of the individuals fall between 76 and 82 in the male series and between 77 and 84 in the female series. Extremely long heads and extremely short heads are of rare occurrence.

In Tables XIX, XX, XXI, XXII, and XXIII the men and women with the longest and shortest heads, respectively, are listed. This division in the main is very satisfactory. With the long heads there are associated in a very large number of individuals tall stature, high faces, narrow noses, straight hair, an abundance of beard and body hair, and a lighter skin color. This holds true for both sexes. Number 102 (Table XXVII) comes nearer to the Melanesian type, but it is the most outstanding exception to the above generalization.

In the short-headed series the results are not quite so satisfactory so far as the individuals making up the series are concerned. Many short heads are associated with short stature, low faces, broader noses, more wavy hair, less beard and body hair, and a darker skin color. There are a few exceptions to the rule that are worthy of further study. In the female series Numbers 136, 13, 80, 150, and 19, and in the male series Numbers 159, 158, 152, 169, 110, 179, 173 have very short heads but high or medium faces with very narrow noses. In many ways, with the exception of head form, they approach the characteristics of those individuals having the longest heads. They have a light skin. They are either individuals of the same type with deformed heads or represent a different type with some characteristics in common. A large proportion of these persons have hair much more wavy than the average. But in addition to these exceptional individuals we have the long list of characteristics associated with the longest and the shortest heads mentioned above. From these it is clear that the face form and nose form are the most promising remaining bases of subdivision.

CHARACTERISTICS ASSOCIATED WITH FACE FORM

The facial index has an enormous range of 30 points. In Tables XXIV, XXV, XXVI, XXVII, and XXVIII are listed the individuals with the highest and lowest faces respectively. The results of such subdivisions or groupings are very satisfactory. The two sex series agree in associating longer heads, narrower noses, more beard and body hair and a lighter skin color with the higher facial indices. This is true of the individuals as well as of the average. It is not quite as clear what type of stature or hair form is associated with the higher faces since the results differ in the two sexes.

The characters associated with a low face are short stature, shorter heads, wider noses, less beard and body hair and darker skin. But here again the hair form associated with a low face is not clearly distinctive. If we accept the women as a criterion wavy hair is associated with a low face, while a high face is associated with straighter hair.

TABLE XXIV. CHARACTERISTICS OF THE 23 MEN WITH THE HIGHEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form ^a	Amount of hair ^b	Arm pigment	Cheek pigment
88	90.7	169	81.2	79.3	4	12	4	6
176	91.0	168	81.4	73.7	4	5	4	5
190	91.2	.....	72.4	75.4	1	3	6	4
189	91.3	169	81.3	84.3	4	5	4	4
143	91.4	.....	77.7	73.7	3	11	5	5
166	91.6	180	80.8	77.4	4	8	10	11
201	91.7	179	76.5	62.9	2	2	8	7
100	91.8	170	75.1	76.9	1	2	11	10
193	92.0	164	85.4	87.8	2	0	6	6
168	92.1	170	81.9	71.9	2	4	4	6
16	92.1	170	78.4	78.8	2	3	.....	.....
169	92.2	166	84.3	75.5	4	4	4	5
141	92.5	172	72.9	78.2	1	4	1	6
146	93.2	162	74.1	75.9	2	3	6	6
121	93.5	169	78.3	74.6	2	6	4	11
122	94.3	175	76.1	95.7	2	2	10	10
104	94.4	173	81.4	80.0	4	18	4	6
184	94.5	173	81.4	78.7	4	14	4	5
78	95.0	176	80.7	.....	1	6	10	10
158	95.6	166	82.0	72.1	3	3	4	6
198	95.7	168	79.5	66.1	1	10	5	6
186	96.5	173	79.0	74.1	2	1	4	6
134	96.6	171	73.4	81.5	2	1	6	6
Average		170.6	78.9	77.0	2.5	5.5	5.6	6.2
Average of total series		170.3	79.4	81.9	2.4	5.3	7.8	8.0

^a Hair form is given a numerical value. 1 = straight, 2 = low waves, 3 = deep waves, 4 = curly, 5 = frizzly, 6 = woolly. These are averaged at the bottom, the larger the number the more wavy the hair.

^b The amount of beard and body hair is given a numerical value. 0 = absent, 1 = sparse, 2 = medium, 3 = heavy. Since it was observed on six different places a very hairy individual would have a total of 18. The values are averaged the same as the value for pigmentation. The results of this process are not satisfactory, as a few extreme individuals have a great weight in determining the average.

TABLE XXV. CHARACTERISTICS OF 25 WOMEN WITH HIGHEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Cheek pigment
161	87.7	166	83.5	70.4	2	5	4
136	87.7	160	84.8	79.2	2	4	6
81	87.7	163	77.1	84.0	1	4	6
64	87.7	165	82.5	78.4	1	5	5
63	87.8	169	80.5	97.6	4	4	10
126	87.9	157	80.7	76.0	4	10	4
92	88.0	147	87.9	91.3	1	11	11
192	88.1	164	80.2	75.5	4	5	6
15	88.3	160	79.0	79.8	2	4	11
150	88.5	158	87.4	74.5	2	1	2
67	89.8	165	83.1	71.2	1	7	6

TABLE XXV. CHARACTERISTICS OF 25 WOMEN WITH HIGHEST FACES—CONTINUED

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Check pigment
180	90.0	156	80.0	82.6	1	5	5
127	90.8	159	76.0	90.2	2	4	7
95	91.3	160	81.6	84.8	1	4	9
187	91.5	155	78.5	65.5	2	5	5
196	91.7	163	81.7	71.4	3	6	4
145	91.9	166	79.1	70.6	1	5	5
148	92.3	162	83.4	60.4	5	10	6
138	92.5	152	83.6	73.7	1	5	5
182	92.9	150	75.3	81.2	3	4	5
178	93.2	160	79.2	75.5	3	6	6
172	94.2	160	76.8	77.4	2	5	5
59	94.3	167	81.0	90.9	2	4	10
188	97.7	158	81.4	79.2	5	4	4
142	97.7	158	80.0	78.0	2	4	5
Average		160.0	80.9	78.3	2.3	5.2	6.1
Average of total series		160.7	82.0	83.6	2.5	6.4	7.3

TABLE XXVI. CHARACTERISTICS OF THE 19 MEN WITH LOWEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
55	72.0	167	79.7	107.1	5	2	12	10
57	74.0	166	81.6	80.8	2	11	10	9
28	75.3	173	81.8	97.8	3	2	11	9
9	75.3	178	82.2	88.5	1	0	11	11
111	76.6	161	79.6	87.6	1	6	5	10
41	77.5	172	80.8	77.8	1	1	10	10
41	77.5	163	78.4	78.8	1	6	10	10
89	78.2	174	80.2	89.7	4	6	12	10
110	78.7	174	85.5	74.6	2	0	13	10
27	79.0	184	86.3	86.0	4	2	12	10
199	79.6	165	77.4	86.0	1	12	4	7
120	80.0	163	76.6	75.9	1	5	12	12
62	80.7	162	86.1	94.0	1	1	7	12
68	80.8	178	79.0	93.2	2	2	10	6
31	81.1	171	80.0	87.0	1	15	10	10
2	81.4	173	85.6	97.8	4	3	11	9
12	82.0	173	76.4	82.7	1	1	6	7
66	82.5	184	76.7	85.4	5	9	12	10
23	83.2	167	78.2	78.4	5	12	11	7
Average		169.9	80.7	86.8	2.4	5.0	9.9	9.4
Average of total series		170.3	79.4	81.9	2.4	6.3	7.8	8.0

TABLE XXVII. CHARACTERISTICS OF THE 24 WOMEN WITH THE LOWEST FACES

Catalog number	Facial index	Stature	Cephalic index	Nasal index	Hair form	Arm pigment	Cheek pigment
50	68.7	156	80.3	100.0	4	10	9
26	71.6	163	76.9	90.0	1	10	9
68	75.4	161	87.2	107.7	5	10	9
21	75.4	161	88.2	86.4	6	10	10
108	76.5	151	84.2	79.2	2	4	6
181	77.0	165	86.0	89.1	2	4	6
39	77.2	164	83.6	102.4	3	4	10
6	77.4	158	87.4	85.1	2	9	10
32	77.4	156	83.3	79.2	4	10	10
44	77.5	158	86.9	95.1	3	10	7
38	77.5	166	81.2	93.3	2	6	9
37	77.8	157	88.2	93.0	3	11	11
92	76.8	154	80.6	85.7	5	7	6
133	78.9	161	81.1	73.6	2	5	6
71	79.1	162	82.4	96.6	3	4	4
19	79.2	164	88.7	75.0	2	10	9
51	79.7	165	81.3	88.4	2	6	10
1	79.8	160	85.6	87.5	1	11	9
30	80.2	160	86.0	85.7	4	4	6
97	80.6	160	91.3	80.8	2	10	9
75	80.9	163	77.3	97.8	2	4	5
35	81.1	161	81.2	97.7	1	6	10
102	81.2	165	73.8	90.2	4	6	6
4	81.4	156	88.9	85.7	1	11	9
Average		160.3	83.7	89.5	2.8	7.6	8.1
Average of total series		160.7	82.0	83.6	2.5	6.4	7.3

TABLE XXVIII. AVERAGE OF CHARACTERISTICS OF FACE FORM GROUPS

	23	MEN	19	25	WOMEN	24
	Highest faces	Total series	Lowest faces	Highest faces	Total series	Lowest faces
Stature	170.6	170.3	169.9	160.0	160.7	160.3
Cephalic index	78.9	79.4	80.7	80.9	82.0	83.7
Nasal index	77.0	81.9	86.8	78.3	83.6	89.3
Hair form	2.5	2.4	2.4	2.3	2.5	2.8
Hair amount	5.5	5.3	5.0	....	....	....
Arm pigment	5.6	7.8	9.9	5.2	6.4	7.6
Cheek pigment	6.2	8.0	9.4	6.1	7.3	8.1

CHARACTERS ASSOCIATED WITH NOSE FORM

Nose form is the most variable of all the characters. It ranges from an index of 60 to one of 108. In other words there is here in one series the greater part of the entire range of the nasal index. An inspection of Tables XXIX, XXX, XXXI, XXXII, and XXXIII will show that the narrowest noses are associated with taller stature, slightly longer heads, higher faces, more beard and body hair and a lighter skin color.

The widest noses are associated with shorter stature, shorter heads, lower faces, less body hair, and a darker skin color. Hair form is again uncertain.

TABLE XXIX. CHARACTERISTICS OF THE 23 MEN WITH THE NARROWEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
201	62.9	179	76.5	91.7	2	2	8	7
198	66.1	168	79.5	95.7	1	10	5	6
159	68.4	172	81.6	84.1	3	2	4	6
152	70.9	177	83.9	86.4	2	6	3	5
168	71.9	170	81.9	92.1	2	4	5	6
158	72.1	166	82.0	95.6	3	3	4	6
14	72.7	163	82.4	83.9	1	11	10	9
176	73.7	168	81.4	91.0	4	5	4	5
143	73.7	.....	77.7	91.4	3	11	5	5
186	74.1	173	79.0	96.5	2	1	4	6
174	74.5	174	79.3	87.5	2	4	5	5
121	74.6	169	78.3	93.5	2	6	4	11
110	74.6	174	85.5	78.7	2	0	13	10
190	75.4	.....	72.4	91.2	1	3	6	4
169	75.5	166	84.3	92.2	4	4	4	5
146	75.9	162	74.1	93.2	2	3	6	6
120	75.9	163	76.6	80.0	1	5	12	12
129	75.9	162	77.3	89.6	2	15	4	6
17	75.9	178	77.5	89.2	2	2	12	11
100	76.9	170	75.1	91.8	1	2	11	10
94	77.2	175	76.5	88.4	2	3	4	6
166	77.4	180	80.8	91.6	4	8	10	11
173	77.4	163	87.8	86.0	2	4	10	6
Average		170.0	79.6	89.6	2.2	4.9	6.6	7.1
Average total series		170.3	79.4	87.0	2.4	5.3	7.8	8.0

TABLE XXX. CHARACTERISTICS OF THE 20 WOMEN WITH THE NARROWEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Arm pigment	Cheek pigment
148	60.4	162	83.4	92.3	5	10	6
187	65.5	155	78.5	91.5	2	5	5
171	69.2	169	78.5	82.2	2	6	6
161	70.4	168	83.5	87.7	2	5	4
145	70.6	166	79.1	91.9	1	5	5
67	71.2	165	83.1	89.8	1	7	6
196	71.4	163	81.7	91.7	3	6	4
133	73.6	161	81.1	78.9	2	5	6
138	73.7	152	83.6	92.5	1	5	5
150	74.5	158	87.4	88.5	2	1	2
13	74.5	157	85.0	85.7	3	10	9
19	75.0	164	88.7	79.2	2	10	4
139	75.0	.....	78.1	86.6	4	6	6
178	75.5	160	79.2	93.2	3	6	6
192	75.5	164	80.2	88.1	4	5	6
110	76.0	159	79.4	84.7	4	6	6
126	76.0	157	80.7	87.9	4	10	4
80	76.9	157	86.1	86.8	3	6	10
172	77.4	160	76.8	94.2	2	5	5
87	77.4	166	83.5	83.2	2	4	7
Average		161.1	81.9	87.8	2.6	6.1	5.6
Average total series		160.7	82.0	84.7	2.5	6.4	7.3

TABLE XXXI. CHARACTERISTICS OF THE 25 MEN WITH THE WIDEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
165	85.7	167	80.8	89.3	4	2	7	6
199	86.0	165	77.4	79.6	1	12	4	7
86	86.0	166	77.5	89.2	4	2	4	4
147	86.0	170	75.6	84.8	4	10	4	6
27	86.0	184	86.3	79.0	4	2	12	10
31	87.0	171	80.0	81.1	1	14	10	10
54	87.0	172	79.7	87.2	1	8	10	9
119	87.5	161	77.0	87.0	2	7	12	12
111	87.5	161	79.3	76.5	1	6	5	10
193	87.8	164	85.4	92.0	2	0	6	6
45	87.8	175	82.5	84.6	1	1	10	12
46	88.2	174	83.0	87.2	5	4	10	12
9	88.5	178	82.2	75.3	1	0	11	11
89	88.7	174	80.2	78.2	4	6	12	10
118	89.4	169	76.2	88.6	4	5	4	10
116	89.8	163	84.5	85.0	1	3	6	4
68	93.9	173	79.0	80.3	2	2	10	6

TABLE XXXI. CHARACTERISTICS OF THE 25 MEN WITH THE WIDEST NOSES—CONTINUED

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Hair amount	Arm pigment	Cheek pigment
62	94.0	162	86.1	80.7	1	1	7	12
122	95.7	175	76.1	94.3	2	2	10	10
164	95.9	167	77.0	90.5	4	3	4	6
183	96.1	165	80.1	90.1	2	2	4	5
28	97.8	173	81.8	75.3	3	2	11	9
2	97.8	173	85.8	81.4	4	3	11	9
123	100.0	166	77.3	87.3	2	2	10	10
55	107.1	167	79.7	72.0	5	2	12	10
Average		169.6	80.4	83.9	2.6	4.0	8.2	8.6
Average of total series		170.3	79.4	87.0	2.4	5.3	7.8	8.0

TABLE XXXII. CHARACTERISTICS OF THE 21 WOMEN WITH THE WIDEST NOSES

Catalog number	Nasal index	Stature	Cephalic index	Facial index	Hair form	Arm pigment	Cheek pigment
26	90.0	163	76.9	75.4	1	10	9
127	90.2	159	76.0	90.8	2	4	7
102	90.2	165	73.8	81.2	4	6	6
59	90.9	167	81.0	94.3	2	4	10
112	90.9	155	82.7	84.6	1	4	7
92	91.3	147	87.9	88.0	1	11	11
185	93.0	152	82.0	82.1	2	4	6
37	93.0	157	88.2	77.8	3	11	11
38	93.3	166	81.2	77.5	2	6	9
61	93.5	165	83.1	82.3	2	7	10
33	93.8	166	83.9	87.3	4	11	10
49	95.4	170	75.0	87.3	1	10	7
22	95.4	159	86.1	81.8	1	6	10
44	95.1	158	86.9	77.5	3	10	7
71	95.6	162	82.4	79.1	5	4	9
63	97.6	169	80.5	87.8	4	4	10
75	97.6	163	77.3	80.9	2	4	5
35	97.7	161	81.2	81.1	1	6	10
50	100.0	156	80.3	71.6	4	10	9
39	102.4	164	83.5	77.2	3	4	10
68	107.7	161	87.2	75.4	5	10	9
Average		161.1	81.8	82.0	2.5	7.0	8.6
Average of total series		160.7	82.0	84.7	2.5	6.4	7.3

TABLE XXXIII. AVERAGE CHARACTERISTICS OF THE NOSE FORM GROUPS

	23	MEN	25	WOMEN		
	Narrowest noses	Total group	Widest noses	Narrowest noses	Total group	Widest noses
Stature	170.0	170.3	169.6	161.1	160.7	161.1
Cephalic index	79.6	79.4	80.4	81.9	82.0	81.8
Facial index	89.6	87.0	83.9	87.8	84.7	82.9
Hair form	2.2	2.4	2.6	2.6	2.5	2.5
Hair amount	4.9	5.3	4.0	....	....	....
Arm pigment	6.6	7.8	8.2	6.1	6.4	7.0
Cheek pigment	7.1	8.0	8.6	5.6	7.3	8.6

TABLE XXXIV. CHARACTERISTICS OF MEN WITH MARKED ENAMEL RIM ON THE INCISOR TEETH

Catalog pigment	Stature	Cephalic index	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
198	168	79.5	95.7	66.1	1	10	5	6
176	168	81.4	91.0	73.7	4	5	4	5
195	176	77.6	86.9	82.7	1	2	9	6
154	.....	75.9	88.9	78.4	4	2	4	4
174	174	79.3	87.5	74.5	2	4	5	5
183	165	80.1	90.1	96.1	2	2	4	5
184	173	81.4	94.5	78.7	4	14	4	5
121	169	78.3	93.5	74.6	2	6	4	11
28	173	81.8	75.3	97.8	3	2	11	9
2	173	85.6	81.4	97.8	4	3	11	9
Average	170.6	80.1	88.5	82.0	2.7	5.0	6.1	6.4
Average of total series	170.3	79.4	87.0	81.9	2.4	5.3	7.8	8.0

TABLE XXXV. CHARACTERISTICS OF MEN WITH SLIGHTLY DEVELOPED RIM ON INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Hair amount	Arm pigment	Cheek pigment
158	166	82.0	95.6	72.1	3	3	4	6
141	172	72.9	92.5	78.2	1	4	11	6
143	.....	77.7	91.4	73.7	3	11	5	5
189	169	81.3	91.3	84.3	4	5	4	4
191	169	79.9	85.0	82.8	2	6	4	6
179	167	87.1	85.4	79.6	4	2	4	4
159	172	81.6	84.1	68.4	3	2	4	6
125	164	81.9	85.4	84.0	1	6	6	10
165	167	80.8	89.3	85.7	4	2	7	6
164	167	77.0	90.5	95.9	4	3	4	6
123	166	77.3	87.3	100.00	2	2	10	10
120	163	76.6	80.0	75.9	1	5	12	12
9	178	82.2	75.3	88.5	1	0	11	11
98	174	80.2	89.7	84.9	1	2	11	11
40	176	75.9	.....	77.6	1	15	10	9
Average	169.3	79.6	87.3	82.1	2.3	4.5	7.1	7.5
Average of total series	170.3	79.4	87.0	81.9	2.4	5.3	7.8	8.0

TABLE XXXVI. CHARACTERISTICS OF WOMEN WITH MARKED ENAMEL RIM ON THE INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
155	154	85.6	82.7	83.3	2	5	6
4	156	86.9	81.4	85.7	1	11	9
182	150	75.3	92.9	81.3	3	4	5
138	152	83.6	92.5	73.7	1	5	5
172	160	76.8	94.2	77.4	2	5	5
Average	154.4	81.6	88.7	80.3	1.8	6.0	6.0
Average of total series	160.7	82.0	84.7	83.6	2.5	6.4	7.3

TABLE XXXVII. CHARACTERISTICS OF WOMEN WITH SLIGHTLY DEVELOPED ENAMEL RIM ON THE INCISOR TEETH

Catalog number	Stature	Cephalic index	Facial index	Nasal index	Hair form	Arm pigment	Cheek pigment
13	157	85.0	85.7	74.5	3	10	9
38	166	81.2	77.5	93.3	2	6	9
133	161	81.1	78.9	73.6	2	5	6
126	157	80.7	67.9	76.0	4	10	4
188	158	81.4	97.7	79.2	5	4	4
180	156	80.0	90.0	82.6	1	5	5
192	164	80.2	88.1	75.5	4	5	6
48	167	81.4	87.3	80.0	1	10	11
37	157	88.2	77.8	93.0	3	11	11
32	156	83.3	77.4	79.2	4	10	10
Average	160.0	82.2	84.8	80.7	2.9	7.6	7.5
Average total series	160.7	82.0	84.7	83.6	2.5	6.4	7.3

TABLE XXXVIII. AVERAGE CHARACTERISTICS OF THE TOOTH FORM GROUPS

	MEN			WOMEN		
	Marked Rim	Slight Rim	Total Series	Marked Rim	Slight Rim	Total Series
Stature	170.6	169.3	170.3	154.4	160.0	160.7
Cephalic index	80.1	79.6	79.4	81.6	82.2	82.0
Facial index	88.5	87.3	87.0	88.7	84.8	84.7
Nasal index	82.0	82.1	81.9	80.3	80.7	83.6
Hair form	2.7	2.3	2.4	1.8	2.9	2.5
Hair amount	5.0	4.5	5.3	.....	.....	.....
Arm pigment	6.1	7.1	7.8	6.0	7.6	6.4
Cheek pigment	6.4	7.5	8.0	6.0	7.5	7.3

CHARACTERS ASSOCIATED WITH THE ENAMEL ON THE UPPER INCISOR TEETH

On account of its high frequency in the Mongoloid types, the enamel rim on the upper incisor teeth is of considerable interest in a study of the Polynesian peoples. In Tables XXXIV, XXXV, XXXVI, XXXVII, and XXXVIII, I have listed the individuals with marked and slight incisor rims. The results are not conclusive. It is clear that this character is associated with a high face and a lighter skin color. The association with other characters is not certain. Many of the individuals with a marked incisor rim are tall, long-headed, high-faced, and narrow-nosed. Those individuals having a slightly developed incisor rim form a most mixed and heterogeneous group.

CHARACTERS OF TWO MARQUESAN TYPES

The above analyses of physical characteristics have sufficiently demonstrated not only the heterogeneity of the series under consideration, but also the correlations or associations of many characters. While it is still uncertain just what are the affiliations of certain characters such as stature, hair form, and the frequency of the incisor rim, there are in the main two tendencies shown in these associations or correlations which clearly indicate at least two different types. These may be outlined as follows:

TYPE I	TYPE II
Characterized by	Characterized by
1. Taller stature	1. Shorter stature
2. Longer heads	2. Shorter heads
3. Higher faces	3. Lower faces
4. Narrower noses	4. Wider noses
5. Straighter hair	5. More wavy hair
6. More beard	6. Less beard
7. More body hair	7. Less body hair
8. Lighter skin color	8. Darker skin color
9. More frequent incisor rim	9. Less frequent incisor rim

At present it is possible to describe these two types only in terms of each other. In saying that Type I has longer heads I do not mean that they are necessarily markedly dolichocephalic, but that on the average their heads are slightly longer than those of Type II. The other statements likewise are merely comparative. For the present no attention will be paid the other elements of the population.

ANALYSIS AND CLASSIFICATION OF INDIVIDUALS

Since it is clear that there are at least two widely different types in the Marquesas, it is desirable to know what proportion of the population is formed by each type and whether or not these two types will include all of the population. This information can be derived only from an analysis of individuals, for it must be assumed that the average characters of the types are to be found in individuals. By this I mean that persons belonging to Type I should be tall, longer headed, higher faced, narrower nosed, lighter skinned, straighter haired, and more heavily bearded than those belonging to Type II. In order that I may not seem to defy the law of chance I wish to make it clear that I would not expect every individual to show all of these characters in the extreme. Yet in a homogeneous race group the correlation or association is closer than is generally realized. A member of a homogeneous race group should approach the mean of the type in a majority of his characteristics.

Since the most promising differences occurred in head form, face form, and nose form, the cephalic, facial and nasal indices were used as the basis of my subdivision. Later the results were supplemented by an analysis on the basis of pigmentation, hair form, and stature.

Persons with a long head, high face, and narrow nose were tentatively placed in Type I. Those with a short head, low face and broad nose were put in Type II. Intermediate types and types that did not fall into the two groups were classed as mixed. Later study on the basis of other characters led me to remove some of the individuals from Type I and Type II and place them in separate groups. They were predominatingly of Type I or Type II, but each showed one or more characteristics of the other group. These were called mixed-near Type I and mixed-near Type II.

One hundred fifty-eight records were available for the analysis. Of the persons measured 28 per cent had long heads, high faces, and narrow noses, 14 per cent being more qualified in two of these characteristics, but slightly divergent in one character or having one character lacking. In their other characters they were apparently related to the individuals in Type I. Thus about 42 per cent of the sample was assigned to Type I.

Of the sample 26 per cent had short heads, low faces, and broad noses and 10 per cent diverged slightly in one character, but were still unmistakably affiliated with Type II. These two types then account for about 78 per cent of this sample. Of the remainder 22 per cent were classed as mixed or unclassifiable. Of these 9 per cent were intermediate in all three characters and were probably mixed types, and three more were very probably also mixtures of Type II. Of the remaining 13 per cent about three individuals approached the Melanesian type. The others do not fit. They are extremely short-headed, but have high or moderately high

faces and narrow noses, light skin and well developed beard and body hair. They are the individuals I have previously spoken of as having very possibly artificially deformed heads. But it must be repeated here that this is by no means certain as yet. They are so few in number it is difficult to state their other characteristics with any degree of certainty. It is equally possible that they represent another racial element in the population. If this is true, its segregation will affect somewhat the percentages given above, particularly those of Type I which it most closely approaches in several characteristics.

INTER-ISLAND DISTRIBUTION OF THE TWO TYPES

While no pretense is made that any individual I place in Type I or Type II is a pure unmixed member of that type, it is fairly certain that a majority of those individuals classed as Type I or Type II were predominatingly of those types, which serves our purpose just as well. Three independent sortings resulted in only a few disagreements of one class. A few individuals were classed sometimes as near Type I and sometimes as mixed. But not over 5 per cent were the subjects of such changes.

It later occurred to me that it would be of interest to work out the distribution of the two types in the different islands. The results are listed in Table XXXIX, which shows clearly the distribution. Type I is to be found in all of the islands but is less mixed in the southeastern islands of the group. Type II is strongest in Ua Huku, but occurs also in Nuku Hiva, Ua Pou, and to a lesser extent in Hiva Oa. While the series is small and the results cannot be taken literally, the differences are so marked that there can be little doubt that they indicate roughly the true state of affairs. So far as this sample may be relied upon, it would indicate that if these two physical types had different languages and cultures, as they conceivably should have had, the language and culture belonging to Type II should be most clearly recognizable in Ua Huku, Nuku Hiva, and Ua Pou. While it would have unquestionably affected Hiva Oa, it is here and in Tahu Ata and Fatu Hiva that the culture and language of Type I should be found. In Ua Huku, Nuku Hiva, Ua Pou, and to a lesser extent in Hiva Oa there should be found a stratification of the cultures.

I will leave this correlation of the physical and cultural differences to those better acquainted with the details of culture. My purpose in making the above statement is to bring out the fact that the averages obtained in the inter-island grouping cannot be taken as the averages of the two types. The northwestern group contained many individuals belonging to Type I, although Type II was the prevailing type. In the southeastern group there were a few individuals of Type II. For this reason I have separated the material into five groups used above and averaged their characteristics. These are given in Tables XL and XLI.

DETAILED AVERAGES OF THE DIFFERENT TYPES

In this subdivision and grouping all of the material has been used. The averages for Type I are given in the first column. In the second column Type I has been combined with those individuals who were near Type I, but departed from the type in some one or two characters. In column three the averages of these individuals (near Type I) are given separately. In the fourth column have been placed all the mixed, unclassifiable individuals and those near Type I and near Type II. In the succeeding columns are those near Type II, Type II and near Type II, and finally Type II. It will be seen that some individuals are used in more than one column (2, 4, and 7).

An inspection of both Table XL and XLI demonstrates that this subdivision of the material into two types and mixtures thereof has been fairly successful. The averages progress smoothly from Type I to Type II or from Type II to Type I. The mixed individuals give intermediate averages for most characters. From left to right the index of pigmentation decreases, the development of the beard, body hair, and the frequency of the incisor rim also decrease. Hair form is irregular. Stature also does not behave in a convincing manner. Among the women the mixed individuals are the tallest, but with the men the reverse is true. The only other irregularities in the anthropometric results are slight ones in minimum frontal and bigonial diameters and the indices based on them. But these irregularities indicate clearly that there is still a disturbing factor in the series that has not been isolated.

For convenience the averages and differences of Types I and II are placed side by side in Table XLII. Here as elsewhere in this paper a numerical value has been given to certain attribute characters and the results treated statistically. As previously explained, the color values have been numbered from 1 to 14 and the results averaged. The smaller the number is the lighter is the color. Hair form has also been given a value of 1 and wavy hair a value of 2, and so on. A similar treatment was accorded the development of beard and body hair and the incisor rim. In reading Table XLII, it is sufficient to know that in pigmentation a small number indicates a light pigmentation; in hair form a small number indicates straight hair; in beard and body hair development a small number indicates a poor development; and in the incisor rim a small number indicates a low frequency.

The figures given for men and for women in Table XLII agree in emphasizing the enormous differences between Type I and Type II. Of the 24 characters considered, the differences in 20 are sufficiently large to remove doubt of their significance. In only four characters—hair form, minimum frontal, bigonial, and cephalo-facial index—are the differences small and contradictory in the two sexes. Type II is unquestionably darker than Type I, has a poorer development

of the beard and body hair, and also a less frequent occurrence of the incisor rim. Type II is shorter, has shorter, wider heads, wider and lower faces, and wider and lower noses. As a result of these differences, the cephalic index is greater in Type II, the facial index is about 12 points less on the average, and the nasal index 12 or more points higher. Other consistent differences are smaller fronto-parietal indices and a larger ear index in Type II.

There can be no doubt that at least two separate and radically different groups of associated characters are represented. A study of the photographs of the two groups will add still further to the lists of associated characters. On the basis of measurements and descriptive characters, I have sorted out the photographs as best I could into groups approaching Type I and Type II. I do not urge that any of these be accepted as pure members of either type, although it seems altogether probable that many of them are. For our purpose it will be sufficient to say that in a totality of their characters the men in Plate XXXVI and the women in Plate XXXVIII approach Type I, as I have described it. The men who most clearly approach Type II are shown in Plate XXXVII and the women in Plate XXXIX. Many better examples of the two types were photographed, but under such adverse conditions that the photographs do not lend themselves well to reproduction. Most of the men represented in Plate XXXVI are fairly typical of Type I. Numbers 7, 8, 10, 13 are very possibly of a different type. They have extremely short heads. In Plate XXXVII numbers 1, 2, and 3 are rather extreme examples of Type II. The other members are probably mixed with various other elements besides Type I. Numbers 3, 4, 7, 9, 11 and 14 are poor examples of the type. The women are much more difficult to select. Numbers 1, 2, 4, 7, 11, 12 and 13, on Plate XXXIX are good examples of Type II. Most of the women in Plate XXXVIII approach fairly closely Type I, but numbers 5, 6, 9, and 15 are the best representatives. In Plate XL I have placed those who fall in the mixed and unclassified groups. Numbers 2, 5, 11, and 13 represent the extremely short-headed element as do also numbers 8 and 12 of Plate XXXVIII. For comparison a few photographs of persons of mixed Caucasian and Asiatic origin are given in Plate XLI.

A careful study of the photographs suggest many other characters in which the two types differ. Type II has thicker lips and the eyes are peculiar, being less wide open, and several have a suggestion of epicanthic fold. The lower lid of some of the eyes in Type II has a swollen beveled appearance. The outer canthus is somewhat higher than the inner canthus which results in an obliquely placed eye slit. Type II is also heavier and stockier. The neck is short and heavy. Type I, when all Type II characters are removed, are more Caucasoid in appearance. The nasal bridge is higher and the lips are thinner. The hair, too, seems to be straighter in Type I although it should be emphasized here that in neither of these two types

do we find the stiff straight black hair characteristic of the Chinese, Japanese, and many Malay and American peoples.

TABLE XXXIX. INTER-ISLAND DISTRIBUTION OF TWO PHYSICAL TYPES IN THE MARQUESAS

Island	Type I		Mixed near Type I		Intermediate and unclassifiable		Mixed near Type II		Type II		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
MEN											
Nuku Hiva	0		2		2		2		5		11
Ua Huku	1	0	0	18	1	18	1	18	5	46	8
Ua Pou	4	12	7	0	1	12	3	12	5	64	20
Hiva Oa	22	20	4	35	7	5	0	15	2	25	35
Tahu Ata	0	63	0	11	0	20	0	0	0	5	0
Fatu Hiva	1	0	2	0	7	0	0	0	0	0	10
Total.....	28	10	15	20	18	70	6	0	17	0	84
		33		18		21		7		20	
WOMEN											
Nuku Hiva	1		0		2		2		2		7
Ua Huku	1	14	0	0	0	28	2	28	7	28	10
Ua Pou	1	10	2	0	8	0	4	20	12	70	27
Hiva Oa	10	4	4	7	7	29	2	14	3	44	26
Tahu Ata	2	38	—	15	—	27	—	8	—	12	2
Fatu Hiva	1	100	1	—	—	—	—	—	—	—	2
Total.....	16	50	7	50	17	—	10	—	24	—	74
		21		9		23		13		32	
TOTAL SERIES											
Nuku Hiva	1		2		4		4		7		18
Ua Hiva	2	5	0	11	1	22	3	22	12	39	18
Ua Pou	5	11	9		9	5	7	17	17	67	47
Hiva Oa	32	10	8		14	19	2	15	5	36	61
Tahu Ata	2	52		13		23		3		8	2
Fatu Hiva	2	100	3		7						12
Total.....	44	17	22	25	35	58	16		41		158
		28		14		22		10		26	

TABLE XL. AVERAGE CHARACTERS OF THE DIFFERENT PHYSICAL TYPES
MEN

Character	Type I	Type I and near Type I	Near Type I	Mixed and near Type I and near Type II	Mixed	Near Type II	Type II and near Type II	Type II
Relative arm pigment.....	6.4	6.9	8.0	7.9	7.3	9.5	9.8	9.9
Relative cheek pigment.....	6.3	7.2	8.4	8.2	7.6	9.8	9.5	9.4
Relative hair form.....	2.4	2.5	2.5	2.3	2.2	2.1	2.5	2.6
Development of beard ^a	3.3	3.4	3.5	2.8	2.2	2.2	2.0	2.0
Development of body hair.....	2.8	2.9	3.0	2.6	2.2	3.0	2.1	1.8
Rim on lateral incisor ^b	1.0	.9	.4	.5	.6	.0	.4	.4
Rim on mesial incisor.....	1.1	.9	.4	.5	.6	.0	.4	.5
Stature.....	171.0	171.0	171.1	169.6	168.0	170.8	170.7	170.6
Head length.....	195.0	194.8	194.6	192.5	191.3	191.1	191.3	191.5
Head width.....	151.0	151.4	152.5	153.6	154.5	153.6	155.1	155.6
Minimum frontal.....	102.1	102.5	103.4	103.7	103.1	106.5	103.7	102.7
Face width.....	141.7	142.1	142.9	143.2	143.0	144.6	145.5	145.8
Bigonial diameter.....	109.4	110.1	111.5	109.9	108.7	109.8	109.1	108.8
Face height.....	129.4	128.6	126.6	123.9	123.9	118.3	116.8	116.3
Nasal height.....	56.2	55.2	53.3	52.5	52.3	51.3	50.2	49.8
Nasal width.....	42.7	42.9	43.3	43.2	43.4	42.6	43.6	43.9
Cephalic index.....	77.6	77.9	78.4	79.9	80.9	80.4	81.1	81.3
Fronto-parietal index.....	67.6	67.8	68.3	67.7	66.7	69.3	66.8	66.0
Cephalo-facial index.....	94.0	93.8	93.7	93.2	92.5	94.2	93.8	93.7
Zygomatico-frontal index.....	72.1	72.2	72.5	72.5	72.1	73.6	71.3	70.5
Zygomatico-mandibular index.....	77.1	77.4	77.9	76.7	75.8	76.1	74.7	74.2
Facial index.....	91.3	90.6	89.0	86.3	86.6	81.8	80.3	79.8
Nasal index.....	76.6	78.3	81.9	82.7	83.4	82.8	87.1	88.7
Ear index.....	49.2	48.6	47.8	48.0	47.9	48.9	50.2	50.6
Number of men.....	28	43	15	39	18	6	23	17

^a Beard and body hair are considered separately from here on, so that 9 is the maximum index.

^b The incisor rim was indicated as follows: 0 = absent, 1 = slight, 2 = medium, 3 = marked.

These values were totaled and divided by the number of cases. The average values are small here in all of the types.

TABLE XLII. AVERAGE CHARACTERS OF THE DIFFERENT PHYSICAL TYPES OF WOMEN

Character	Type I	Type I and near Type I	Near Type I	Mixed and near Type I and near Type II	Mixed	Near Type II	Type II and near Type II	Type II
Relative arm pigment.....	5.5	5.3	5.0	6.0	6.1	6.6	7.2	7.4
Relative cheek pigment.....	5.8	6.0	6.1	7.0	7.4	6.8	8.1	8.5
Relative hair form.....	3.6	2.6	1.4	2.2	2.2	2.8	2.5	2.5
Rim on lateral incisor.....	.5	.7	1.0	.2	.1	.0	.1	.1
Rim on mesial incisor.....	.9	.7	.1	.3	.2	.4	.3	.2
Stature.....	160.2	160.8	162.1	162.0	162.9	160.3	157.2	155.1
Heel length.....	186.4	186.4	185.1	183.8	184.7	181.4	180.4	180.0
Head width.....	145.1	147.8	148.5	150.5	150.4	152.0	151.6	151.4
Minimum frontal.....	101.2	101.1	101.1	104.6	103.9	108.5 ^a	108.0 ^a	99.0
Face width.....	132.8	132.8	132.7	136.0	136.6	137.2	137.0	136.9
Bigonial diameter.....	101.7	100.9	99.0	103.3	103.7	105.5	104.1	103.5
Face height.....	120.4	119.6	117.8	116.2	117.8	112.2	110.1	109.2
Nose height.....	52.2	52.0	51.7	49.9	50.2	48.3	45.7	44.6
Nose width.....	39.3	39.6	40.4	40.8	40.9	40.8	40.7	40.7
Cephalic index.....	79.2	79.5	80.3	81.9	81.5	83.9	84.1	84.2
Front-parietal index.....	68.6	68.4	68.1	69.5	69.1	71.4	67.1	65.4
Cephalo-facial index.....	89.9	89.7	89.4	90.7	91.5	90.3	90.4	90.5
Zygomatico-frontal index.....	76.2	76.2	76.3	76.9	75.9	79.1	74.3	72.2
Zygomatico-mandibular index.....	76.6	76.0	74.6	75.8	75.8	76.8	75.9	75.5
Facial index.....	90.7	90.1	88.8	85.5	86.3	81.8	79.8	78.9
Nasal index.....	75.2	76.2	78.6	82.1	81.8	84.7	89.5	91.6
Ear index.....	47.7	48.4	50.5	50.1	50.1	49.7	50.0	50.1
Number of women.....	16	23	7	34	17	10	34	24

^a Due to two extreme cases 121 and 125.

TABLE XLII. COMPARISON OF THE AVERAGES AND DIFFERENCES OF TYPES I AND II

	Type I Men	Total Series, Men	Type II Men	Type I Women	Total Series, Women	Type II Women	Difference Between Types I and II Men	Difference Between Types I and II Women
Relative arm pigment.....	6.4	8.2	9.9	5.5	6.4	7.4	+ 3.5	+ 1.9
Relative cheek pigment.....	6.3	8.6	9.4	5.8	7.3	8.5	+ 3.1	+ 2.7
Relative hair form.....	2.4	2.6	2.6	3.6	2.5	2.5	+ .2	- 1.1
Development of beard.....	3.3	3.6	2.0	.....	.....	.....	- 1.3	.....
Development of body hair.....	2.8	2.5	1.8	.....	.....	.....	- 1.0	.....
Rim on lateral incisor.....	1.0	.7	.4	.5	.3	.1	- .6	- .4
Rim on mesial incisor.....	1.1	.7	.5	.9	.4	.2	- .6	- .7
Stature.....	171.0	170.3	170.6	160.2	160.7	155.1	- .4	- 5.1
Head length.....	195.0	193.2	191.5	186.4	183.2	180.0	- 3.5	- 6.4
Head width.....	151.0	153.2	155.6	145.1	150.1	151.4	+ 4.6	+ 6.3
Minimum frontal.....	102.1	103.2	102.7	101.2	102.1	99.0	+ .6	- 2.2
Face width.....	141.7	143.2	145.8	132.8	135.5	136.9	+ 4.1	+ 4.1
Bigonial diameter.....	109.4	109.5	108.8	101.7	103.0	103.5	- .6	+ 1.8
Face height.....	129.4	124.6	116.3	120.4	114.5	109.2	-13.1	-11.2
Nasal height.....	56.2	53.1	49.8	52.2	48.6	44.6	- 6.4	- 7.6
Nasal width.....	42.7	43.2	43.9	39.3	40.4	40.7	+ 1.2	+ 1.4
Cephalic index.....	77.6	79.4	81.3	79.2	82.0	84.2	+ 3.7	+ 5.0
Fronto-parietal index.....	67.6	67.4	66.0	68.6	68.0	65.4	- 1.6	- 3.2
Cephalo-facial index.....	94.0	93.5	93.7	89.9	90.3	90.5	- .3	+ .6
Zygomatico-frontal index.....	72.1	72.0	70.5	76.2	75.2	72.2	- 1.6	- 4.0
Zygomatico-mandibular index.....	77.1	76.8	74.2	76.6	75.9	75.5	- 2.9	- 1.1
Facial index.....	91.3	87.0	79.2	90.7	84.7	78.9	-12.1	-11.8
Nasal index.....	76.6	81.9	88.7	75.2	83.6	91.6	+12.1	+16.4
Ear index.....	49.2	48.9	50.6	47.7	49.6	50.1	+ 1.4	+ 2.4
Number.....	28	84	17	16	74	24	.....	.....

A DETAILED ANALYSIS OF THE SAMOANS

In view of the clear evidences of at least two types in the Marquesas it becomes highly important to reconsider the Samoans and Tongans in order to determine if possible the presence or absence of Type II. It is not only probable but altogether likely that some of the diversity I attributed to Melanesian intermixture may be due to the presence of Type II since the differences are in the same characters.¹⁰ While Type II cannot be considered Melanesian it has certain Melanesian, Papuan, and negroid characters which might very easily be mistaken for Melanesian influence. I refer, of course, to the darker skin, more wavy hair, low and broad faces, low and broad noses, and thick lips. As a matter of fact this leaves but one or two criteria with which to distinguish between Melanesian intermixture and the influence of Type II. This must be decided largely upon the basis of head form and relative curliness of the hair. With the possibility of head deformation in Tonga and Samoa, the problem is still further complicated.

It will be necessary to test further the homogeneity of the Samoan and Tongan series by subdividing them into different stature, head form, face form, and nose form groups, as I have done for the Marquesan material.

TABLE XLIII. AVERAGE CHARACTERISTICS OF THE STATURE GROUPS OF SAMOAN MEN

Characters	18 Tallest	Total series	20 Shortest
Cephalic index.....	81.2	81.3	82.0
Fronto-parietal index.....	68.0	66.8	67.1
Cephalo-facial index.....	93.9	94.2	93.4
Facial index.....	91.2	89.9	89.9
Nasal index.....	72.5	73.6	73.7
Rim on lateral incisor.....	.33	.76	1.10
Rim on mesial incisor.....	.22	.44	.63
Arm pigment.....	6.1	7.1	8.6
Cheek pigment.....	9.3	10.3	10.2
Hair form.....	1.9	1.7	1.6
Beard development.....	5.8	5.2	5.4
Body hair development.....	6.2	5.2	5.0
Elevation of nasal bridge ^a	2.2	1.9	1.8
Axes of nostrils ^b	2.3	2.3	2.3

^a The higher the number the higher the nasal bridge.

^b The larger the number the more transverse the nostrils.

¹⁰ Op. cit.

TABLE XLIV. AVERAGE CHARACTERS OF THE HEAD FORM GROUPS OF SAMOAN MEN

Character	18 Longest heads	Total series	18 Shortest heads
Stature	174.6	171.7	171.8
Minimum frontal	103.4	103.4	102.8
Face width	143.8	145.9	146.8
Face height	133.2	131.1	131.4
Fronto-parietal index	68.5	66.8	64.7
Cephalo-facial index	95.2	94.2	92.4
Facial index	92.7	89.9	89.6
Nasal index	72.8	73.6	72.6
Rim on lateral incisor .....	.61	.76	.82
Rim on mesial incisor .....	.44	.44	.47
Arm pigment	6.3	7.1	7.5
Cheek pigment	9.1	10.3	9.9
Hair form	2.0	1.7	1.3
Beard development	5.3	5.2	5.5
Body hair development	5.4	5.2	5.4
Nasal bridge	1.9	1.9	1.9
Axes of nostrils	2.4	2.3	2.5

ASSOCIATION OF CHARACTERS OF THE SAMOANS

The measurements of Samoan women are too few in number to warrant satisfactory analysis. In Table XLIII I have summarized the characteristics of the tallest and shortest men. The tallest men are longer headed and have larger fronto-parietal and cephalo-facial indices. The facial index is greater and the nasal index is smaller. The skin color is lighter and there is more beard and body hair. The nasal bridge is also higher. All of these characters are in keeping with those described as typical of Type I in the Marquesas. But the enamel rim on the incisor teeth is less common and the hair is more wavy in the taller individuals. The shortest individuals are characterized by the opposite characters.

In Table XLIV it will be seen that the longer headed individuals are taller, have greater minimum-frontal diameters, narrower, higher faces, larger fronto-parietal and cephalo-facial indices, higher facial and lower nasal indices, and lighter skin colors. The beard and body hair is better developed and there are more antero-posterior nostrils. These characters are also in accord with results obtained in the Marquesas. But again the hair is more wavy and the enamel rim on the incisor teeth is less frequent. Another striking difference is that the group of shortest-headed individuals also have facial indices higher than the average and nasal indices lower than the average. Likewise they have more than an average development of beard and body hair. An examination of the individuals that make up

this group shows that there are relatively few who approach Type II. This is the same extremely short headed element encountered in the Marquesas.

The face-form groups in Table XLV show similar associations of characters. The high faces are associated with taller stature, narrower faces, narrower bigonial diameters, greater face height, narrower noses, longer heads, greater fronto-parietal indices, smaller nasal indices, lighter skin, more beard and body hair, and a higher frequency of the enamel rim on the upper incisor teeth. Again the hair is more wavy and the cephalo-facial index is smaller. As a check I have used absolute face height in Table XLVI. The results are the same as when the facial index is used except that with a larger face height there is associated a larger face width. This is to be expected since there is a certain degree of correlation between all gross diameters of the body. When one diameter is unusually large, many other diameters are also above the average. A higher cephalo-facial index is also associated with a higher face (absolute).

In Tables XLVII and XLVIII are given the nose form groups. A relatively high narrow nose is associated with taller statures, smaller minimum frontal diameters, narrower, higher faces, higher frequency of the incisor rim, lighter skin colors, more beard and body hair, higher nasal bridges, and more antero-posterior nostrils. But the heads are shorter, the fronto-parietal and cephalo-facial indices are less. The widest noses are associated with longer heads on the average. Again this is due to the fact that several individuals with the lowest nasal indices have extremely short heads. When the absolute height and the absolute width of the nose are used the results are the same as those obtained by use of the nasal index with the exception of the associated or correlated differences found in other absolute diameters.

The cephalo-facial index which expresses the ratio of the width of the face to the width of the head is interesting and important in this particular study. A high cephalo-facial index indicates that the face is nearly as wide as or wider than the head. This is a primitive trait, characteristic of many long-headed Mongols, Australoids, and Papuans. It is also characteristic of primitive Caucasoid types and some African Negro types. In this study it is of interest because it is one of the largest differences between Type II and the Melanesians or Papuans. It is also a guide in detecting the presence of artificial head deformation. An excessively low cephalo-facial index in Polynesia can be taken to substantiate the impression that excessively short heads are due in part at least to such deformation. In Table XLIX I have listed the averages of those individuals with the highest and lowest cephalo-facial indices, respectively. The higher cephalo-facial indices are associated with taller statures, longer heads, larger fronto-parietal indices, lighter skin, wavy hair, and more profuse beard and body hair development. But the facial index is lower, the nasal index wider, and the enamel rim is less frequent. The

explanation of the low faces and broad noses is not altogether clear. It may be due to Melanesian influence. The condition of those individuals with a low cephalo-facial index is obviously influenced by the inclusion of many extremely short-headed individuals.

The results obtained by separating the material on the basis of the presence and degree of the enamel rim on the incisor teeth are shown in Table L. They are not at all convincing. Stature and head form are uncertain. The faces are higher, the noses are narrower, skin color is lighter, and the hair more wavy. But the beard and body hair are less developed. This result is not in keeping with the association found with other characters, but is in keeping with the results from Marquesas.

TABLE XLV. AVERAGE CHARACTERS OF THE FACE FORM GROUPS OF SAMOAN MEN
(FACIAL INDEX)

Character	16 Highest faces (relative)	Total series	16 Lowest faces (relative)
Stature	173.1	171.7	172.9
Facial width.....	143.0	145.9	148.2
Bigonial	102.7	104.6	108.2
Facial height.....	138.4	131.1	124.6
Nose width.....	43.8	43.8	44.0
Cephalic index.....	79.1	81.3	81.9
Fronto-parietal index.....	68.9	66.8	66.0
Cephalo-facial index.....	93.7	94.2	95.1
Nasal index.....	70.8	73.6	76.5
Rim on lateral incisor.....	.81	.76	.69
Rim on mesial incisor.....	.62	.44	.44
Arm pigment.....	7.1	7.1	7.5
Cheek pigment.....	9.1	10.3	10.0
Hair form.....	1.8	1.7	1.4
Beard development.....	5.9	5.2	4.4
Body hair development.....	5.2	5.2	4.9
Thickness of lips ^a	2.1	2.1	2.0

^a Thin lips = 1, medium = 2, thick = 3.

TABLE XLVI. AVERAGE CHARACTERS OF THE FACE HEIGHT GROUPS OF SAMOAN MEN
(ABSOLUTE FACE HEIGHT)

Characters	18 Highest faces (absolute)	Total series	16 Lowest faces (absolute)
Stature	172.6	171.7	171.2
Face width.....	147.4	145.9	144.2
Bigonial.....	102.2	104.6	104.1
Cephalic index.....	80.7	81.3	81.3
Fronto-parietal index.....	68.5	66.8	65.7
Cephalo-facial index.....	94.9	94.2	93.8
Facial index.....	94.5	89.9	84.9
Nasal index	70.5	73.6	76.0
Rim on lateral incisor.....	.76	.76	.75
Rim on mesial incisor.....	.47	.44	.44
Arm pigment.....	6.4	7.1	7.6
Cheek pigment.....	9.6	10.3	9.7
Hair form.....	1.6	1.7	1.4
Beard development.....	5.9	5.2	4.2
Body hair development.....	5.7	5.2	4.7

TABLE XLVII. AVERAGE CHARACTERS OF THE NOSE FORM GROUPS OF SAMOAN MEN
(NASAL INDEX)

Characters	16 Narrowest noses (relative)	Total series	15 Widest noses (relative)
Stature	172.0	171.7	169.7
Minimum frontal.....	101.9	103.4	104.8
Face width.....	144.1	145.9	146.6
Face height.....	134.8	131.1	129.6
Cephalic index.....	81.6	81.3	80.5
Fronto-parietal index.....	65.7	66.8	68.0
Cephalo-facial index.....	92.9	94.2	95.2
Facial index.....	93.6	89.9	88.8
Rim on lateral incisor.....	.93	.76	.66
Rim on mesial incisor.....	.93	.44	.26
Arm pigment.....	7.9	7.1	7.9
Cheek pigment.....	9.9	10.3	10.0
Hair form.....	1.7	1.7	1.7
Beard	5.4	5.2	4.8
Body hair.....	4.9	5.2	4.6
Elevation of nasal bridge ^a	2.1	1.9	1.8
Axes of nostrils ^b	2.1	.....	2.6
Thickness of lips.....	2.1	.....	2.1

^a A low nasal bridge = 1, medium = 2, and higher = 3.^b An antero-posteriorly placed nostril = 1, an oblique nostril = 2, and a transverse nostril = 3.

TABLE XLVIII. AVERAGE CHARACTERS OF THE NOSE DIAMETER GROUPS OF SAMOAN MEN

Characters	Absolute height			Absolute width		
	17 Highest noses	Total series	14 Lowest noses	12 Narrowest noses	Total series	17 Widest noses
Stature	172.9	171.7	171.0	171.8	171.7	172.3
Minimum frontal	105.5	103.4	103.4	102.4	103.4	108.8
Facial width.....	148.8	145.9	144.6	142.8	145.9	150.1
Bigonial	105.7	104.6	103.2	100.8	104.6	107.4
Cephalic index.....	81.8	81.3	80.8	82.1	81.3	81.1
Fronto-parietal index.....	.....	.....	.....	66.9	66.8	69.3
Cephalo-facial index.....	89.1	94.2	94.7	93.2	94.2	95.8
Facial index.....	91.9	89.9	87.2	89.4	89.9	88.9
Nasal index.....	69.3	73.6	79.0	70.8	73.6	79.9
Rim on lateral incisor .....	.75	.76	.71	1.00	.76	.41
Rim on mesial incisor .....	.56	.44	.21	.50	.44	.18
Arm pigment.....	6.6	7.1	8.4	8.4	7.1	7.3
Cheek pigment.....	9.5	10.3	9.4	10.0	10.3	10.0
Hair form.....	1.9	1.7	1.8	1.8	1.7	1.7
Beard development.....	5.8	5.2	5.0	5.8	5.2	5.6
Body hair development.....	5.6	5.2	5.0	5.4	5.2	5.4

TABLE XLIX. AVERAGE CHARACTERS OF THE CEPHALO-FACIAL INDEX GROUPS OF SAMOAN MEN

Characters	17 Lowest Cephalo-facial indices	Total series	15 Highest Cephalo-facial indices
Stature	170.3	171.7	171.9
Cephalic index.....	83.7	81.3	80.2
Fronto-parietal index.....	64.2	66.8	69.4
Zygomatico-frontal index.....	70.8	70.9	70.8
Zygomatico-mandibular index.....	73.4	71.7	69.2
Facial index.....	92.3	89.9	88.4
Nasal index.....	70.9	73.6	74.9
Rim on lateral incisor.....	.86	.76	.64
Rim on mesial incisor.....	.73	.44	.28
Arm pigment.....	8.2	7.1	7.3
Cheek pigment.....	9.1	10.3	10.2
Hair form.....	1.4	1.7	1.9
Beard development.....	4.7	5.2	5.8
Body hair development.....	4.8	5.2	5.8

TABLE L. AVERAGE CHARACTERS OF TOOTH FORM GROUP,¹ OF SAMOAN MEN
(ENAMEL RIM ON UPPER INCISOR TEETH)

Characters	Marked on laterals and mesials	Slight on both	Slight on one	Total series
Stature	171.7	169.3	170.2	171.7
Cephalic index.....	81.3	80.8	82.2	81.3
Cephalo-facial index.....	93.6	93.8	94.8	94.2
Facial index.....	92.1	90.3	89.7	89.9
Nasal index.....	70.3	71.2	73.4	73.6
Arm pigment.....	5.5	9.1	7.3	7.1
Cheek pigment.....	8.1	11.3	10.1	10.3
Hair form.....	1.9	1.8	1.1	1.7
Beard development.....	4.5	3.7	5.8	5.2
Body hair development.....	4.7	3.9	5.4	5.2
Number of men.....	10	9	14	70

The analysis shows, therefore, that in the main the same two associations of characters are found in Samoa and in the Marquesas. There is good reason to believe that the Samoan population is made up, in part at least, of the same two physical elements that were dominant in the Marquesas. But the associations were by no means so clear as in the Marquesas. In order to determine the relative importance of these two types and the presence of some of the disturbing factors, it will be necessary to resort to an analysis of the individuals.

THE FREQUENCY OF TWO PHYSICAL TYPES IN SAMOA

Before discussing the analysis of Samoan characteristics it is necessary to recall that I am dealing with the observations made by different men. Some of the most marked differences in the physical types in the Marquesas occurred in the facial height and nasal height. In a measure, this is unfortunate because these two diameters are very difficult to measure. It will be impossible to apply exactly the same criteria to the Samoan data that I used for the Marquesan material. The material will have to be analyzed in terms of itself.

As the first step I have again chosen head form, face form, and nose form as expressed by the cephalic, facial, and nasal indices as criteria of the two types. If an individual has a head longer¹¹ than the average, a face higher than the average, and a nose narrower than the average, I have considered him or her a representative of Type I. An individual with a head shorter than the average, a face lower than the average, and a nose wider than the average was considered as a representative of Type II. Individuals who diverged slightly in one character but

¹¹ I speak in terms of indices and not absolute diameters.

were typical of a given type in two characters were called near I or near II. Individuals who were average in all three characters or who did not fall clearly into either type were classed as mixed or unclassified. This method is similar to that adopted for the Marquesan material.

The underlying principle should be clearly understood. Even in a homogeneous group of individuals the members could be arranged in roughly defined classes. If there were no correlation or association between the different characters in an individual, it is to be expected that about one-half of the individuals would have heads longer than the average or average and above; one-half of these or one-fourth of the total group would have also faces which were higher than the average; and one-half of these or one-eighth of the total series would also have noses narrower than the average. In other words, without any correlation of characters in an individual it is to be expected that one-eighth of the total number of any homogeneous race group would have heads longer, faces higher, and noses narrower than the average. It is only when this proportion is exceeded that it can be regarded as significant of heterogeneity or a high degree of correlation of these characters in the individuals.

In Samoa 30 per cent of the individuals have heads longer, faces higher, and noses narrower than the average.¹² As in the Marquesan material, after this primary and automatic subdivision the material was studied in more detail and individuals changed from one group to another. This consisted principally in changing individuals who were slightly on the other side of the average in one character back to the group to which the other two characters pointed. As a result of this readjustment 45 per cent of the Samoans were fairly good representatives of Type I—an estimate which is perhaps a generous maximum.

Type II is not even so well represented. Only 8 per cent were unmistakably members of Type II, as found in the Marquesas. But 7 per cent more were predominatingly of this type. At best these two types combined account for only about 60 per cent of the population.

The others were mixed and unclassifiable in part but predominatingly of the extremely short-headed, narrow-nosed type.

The differences between Type I and Type II are not so clear as in the Marquesas. While Type I has a larger representation in Samoa, Type II is not so largely represented. The members of Type II in Samoa are not so radically different from Type I as the members in Marquesas. This would seem to indicate that Type II has either been longer in Samoa than in the Marquesas or else that it has been much less important numerically than it is in the Marquesas. A greater

¹² Average is included when the direction of the other indices is unmistakable.

frequency of the short-headed, narrow-nosed type in Samoa also serves to obscure the differences between the two types under discussion.

It will be recalled that my Samoan material was wholly from Savii and Upolu. A detailed analysis reveals no inter-island difference which may be relied upon. Savaii is represented by only eighteen individuals of whom five approach Type II. Upolu is represented by seventy-two individuals of whom about 25 per cent are nearer to Type II than they are to Type I.

A DETAILED ANALYSIS OF THE TONGANS

It will be recalled that the Tongans discussed in a previous paper¹³ were considerably more variable than the Samoans when the variability was measured by the range, standard deviation, and coefficient of variation. It is also noteworthy that the differences between the Samoans and Tongans were quite like the differences between the Samoans or Tongans and the Marquesans. The Tongans had lower, wider noses, lower faces, lower cephalo-facial and higher nasal index. Their hair was more wavy or curly, the epicanthic eyefold in an incipient form was more frequent, and the nasal bridge was lower. But, on the other hand, beards and body hair were more profusely developed and there was a slightly higher frequency of the incisor rim.

I attributed these differences largely to Melanesian admixture. My analysis in the earlier paper was correct so far as it went, but my interpretation was incorrect in part at least. Due to my firm conviction that artificial deformation had markedly altered the natural head form of the Tongans, I hesitated to use the cephalic index in interpreting the results. With the added information in regard to the physical characters of the people of Polynesia, I feel that it is safe to use it tentatively at least. The Tongan data have therefore been subjected to the same treatment as the Samoan and Marquesan data.

ASSOCIATIONS OF CHARACTERS OF THE TONGANS

In the earlier paper on Tonga the material was divided on the basis of hair form. The straight-haired individuals were shorter, but they had higher faces and higher, narrower noses. The deep-waved group was slightly taller, had narrower, lower faces, shorter heads and higher nasal indices. The low-waved group was the tallest and had somewhat wider faces, but the other characters were uncertain.

In Tables LI to LVI I have extended this analysis to stature, head form, face form, nose form, the cephalo-facial index, and the incisor tooth form. It will suffice here if I say that the results in the main are similar to those found in Samoa and the Marquesas and point out the differences which are found.

Table LI shows that tall stature is associated with smaller facial indices. This is contrary to the results in material from Tonga and Samoa. Likewise the nasal index is large in the taller individuals. Skin color is uncertain with slight odds in favor of its being darker in the tall individuals. The incisor rim is less frequent also. An examination of the individuals making up these groups show no excessively low faces or excessively broad noses, but a large number of individuals who are intermediate in this respect or who have only moderately low faces

¹³ Op. cit.

and broad noses. In other words, they do not approach either of the two types very clearly, but appear to be mixed individuals.

In the head form groups (Table LII) the only discordant results are in a somewhat higher nasal index in the longest heads and also a slightly darker skin color. The incisor rim is uncertain. That the shortest heads are lighter in skin color is due to the inclusion of many individuals of a third type with extremely short heads. The face form groups in Table LIII are in accord with the results found in the Marquesas and Samoa except that the enamel rim on the upper incisor teeth is somewhat less frequent in the highest faced group. The nose form groups are highly discordant. With the narrowest noses we have associated shorter stature, shorter heads, straighter hair, and less beard and body hair. The face is higher but skin color and the frequency of the enamel rim on the incisor are uncertain. This peculiar condition I believe is again due to the fact that the narrow-nosed group includes many individuals with extremely short heads and that the broad-nosed group includes several individuals with Melanesian traits.

In Table LV the groups based on the cephalo-facial index are roughly in accord with those found in Samoa. Here again the face is lower and the nasal index above the average in the group with the highest cephalo-facial indices. The skin color seems to be slightly darker, too. Again I can account for these only by the result of Melanesian blood and the presence of a third type with very short heads.

The tooth form groups in Table LVI are closely in accord with the results in Samoa and Marquesas except that the nasal index is very slightly greater.

In brief then, with the exceptions noted above, the same associations of characters have been found in Tonga that were found in Samoa and the Marquesas. A long head, narrow face, and narrow nose are associated with lighter skin color, heavier beard, more body hair, a higher frequency of the enamel rim, taller stature, a higher fronto-parietal index, a higher zygomatico-frontal, zygomatico-mandibular, and facial index, and a lower nasal, ear, and cephalic index. The opposite characters are associated with short heads, low faces, and broad noses. I take this to indicate the presence of the same two elements in Tonga that we found in Samoa and the Marquesas. An individual analysis will help to determine the relative frequency of the two types and to detect any other elements in the population.

TABLE LI. AVERAGE CHARACTERS OF THE TONGAN STATURE GROUPS

Characters	15 Tallest men	Total series	16 Shortest men	16 Tallest women	Total series	17 Shortest women
Minimum frontal	107.0	104.8	103.7	105.2	103.0	100.3
Face width	146.9	143.5	143.2	141.0	136.1	134.2
Cephalic index	80.0	81.1	81.7	81.4	81.6	82.6
Cephalo-facial index	94.2	92.8	91.6	92.1	91.2	90.1
Facial index	88.7	89.2	88.8	89.9	90.8	89.5
Nasal index	79.1	77.6	76.8	74.1	74.2	74.2
Rim on lateral incisor .....	.47	.88	1.20	1.10	1.10	1.12
Rim on mesial incisor .....	.27	.54	.56	.62	.48	.41
Arm pigment	5.3	5.4	5.1	4.4	4.3	4.1
Cheek pigment	10.4	10.9	10.1	8.2	8.9	9.0
Hair form	1.7	1.8	1.6	1.9	1.9	1.6
Beard development	7.3	6.5	6.1	....	....	....
Body hair development	6.1	6.0	6.5	....	....	....

TABLE LII. AVERAGE CHARACTERS OF THE TONGAN HEAD FORM GROUPS

Characters	18 Longest heads men	Total series	12 Shortest heads men	14 Longest heads women	Total series	18 Shortest heads women
Stature	174.9	173.0	172.6	164.6	162.5	163.7 ^a
Minimum frontal	108.2	104.8	103.7	102.4	103.0	103.8
Face width	144.9 ^b	143.5	144.5	133.9	136.1	140.5
Cephalo-facial index	94.7	92.8	90.6	92.1	91.2	89.7
Zygomatico-mandibular index	70.9	73.2	75.8	72.9	72.5	70.9
Zygomatico-frontal index	74.7	73.1	71.9	76.6	75.4	73.9
Facial index	90.5	89.2	89.5	93.2	90.8	88.7
Nasal index	79.8	77.6	73.6	75.8	74.2	71.1
Rim on lateral incisor .....	.61	.88	1.00	1.10	1.10	.88
Rim on mesial incisor .....	.55	.54	.58	.54	.48	.30
Arm pigment	6.1	5.4	4.4	4.6	4.3	4.4
Cheek pigment	10.7	10.9	10.8	7.7	8.9	8.7
Hair form	1.6	1.8	1.7	1.6	1.9	2.1
Beard development	7.1	6.5	5.4	....	....	....
Body hair development	6.7	6.0	5.3	....	....	....

^a Average stature of 17 women with the shortest heads is 162.6. The high average is due to the inclusion of the Queen of Tonga, who is 182 cm. tall. This is 10 cm. taller than any other short-headed woman.

^b Due to two extreme cases of 159 and 154, which may be mistakes.

TABLE LIII. AVERAGE CHARACTERS OF THE TONGAN FACE FORM GROUP

CHARACTERS	16 Highest faces men	Total series	16 Lowest faces men	16 Highest faces women	Total series	15 Lowest faces women
Stature	173.7	173.0	173.8	163.5	162.5	163.1
Cephalic index	79.8	81.1	81.8	78.8	81.6	83.1
Cephalo-facial index	91.8	92.8	95.2	89.4	91.2	92.9
Nasal index	74.1	77.6	83.7	71.7	74.2	75.3
Rim on lateral incisor .....	.44	.88	.87	1.40	1.10	.86
Rim on mesial incisor .....	.50	.54	.69	.47	.48	.66
Arm pigment	6.0	5.4	4.9	3.9	4.3	4.7
Cheek pigment	10.8	10.9	11.2	8.2	8.9	9.5
Hair form	1.5	1.8	1.5	2.0	1.9	1.9
Beard development	6.4	6.5	6.9	....	....	....
Body hair development	6.6	6.0	6.1	....	....	....

TABLE LIV. AVERAGE CHARACTERS OF THE TONGAN NOSE FORM GROUPS

CHARACTERS	17 Narrowest noses men	Total series men	14 Broadest noses men	18 Narrowest noses women	Total series women	15 Broadest noses women
Stature	171.9	173.0	173.1	161.2	162.5	162.4
Cephalic index	82.5	81.1	80.2	82.7	81.6	79.7
Cephalo-facial index	92.6	92.8	92.6	89.7	91.2	92.4
Facial index	91.5	89.2	87.3	92.5	90.6	89.3
Rib on lateral incisor .....	.82	.88	.93	1.00	1.10	.86
Rim on mesial incisor .....	.53	.54	.30	.33	.48	.40
Arm pigment	5.3	5.4	4.4	4.0	4.3	4.9
Cheek pigment	10.5	10.9	10.0	8.8	8.9	9.3
Hair form	1.6	1.8	2.0	2.0	1.9	2.1
Beard development	5.5	6.5	7.1	....	....	....
Body hair	5.3	6.0	6.0	....	....	....

TABLE LV. AVERAGE CHARACTERS OF THE TONGAN CEPHALO-FACIAL INDEX GROUPS

CHARACTERS	20 Largest cephalo- facial	Total series men	18 Smallest cephalo- facial	18 Largest cephalo- facial	Total series women	21 Smallest cephalo- facial
Stature	175.1	173.0	172.1	163.3	162.5	161.5
Cephalic index	79.6	81.1	82.7	80.8	81.6	84.3
Facial index	87.0	89.2	91.6	87.8	90.8	92.5
Nasal index	79.3	77.6	78.1	76.8	74.2	71.9
Rim on lateral incisor .....	.77	.88	.66	1.20	1.10	.88
Rim on mesial incisor .....	.72	.54	.40	.60	.48	.40
Arm pigment	6.0	5.4	5.2	4.6	4.3	4.0
Cheek pigment	10.8	10.9	10.6	8.7	8.9	8.7
Hair form	1.5	1.8	2.2	1.9	1.9	2.1
Beard development	8.4	6.5	5.7	....	....	....
Body hair development	7.0	6.0	5.9	....	....	....

TABLE LVI. AVERAGE CHARACTERS OF THE TONGAN TOOTH FORM GROUPS
(ENAMEL RIM ON UPPER INCISOR TEETH)

CHARACTERS	Marked rim men	Slight rim men	Total series men	Marked rim women	Slight rim women	Total series women
Stature	170.4	174.8	173.0	163.1	161.4	162.5
Cephalic index	81.2	79.8	81.1	80.5	82.4	81.6
Cephalo-facial	93.0	94.1	92.8	91.9	90.5	91.2
Facial index	89.3	88.1	89.2	91.8	91.6	90.8
Nasal index	77.7	79.8	77.6	74.9	73.7	74.2
Arm pigment	5.2	5.7	5.4	4.0	4.1	4.3
Cheek pigment	10.9	10.2	10.9	8.6	8.9	8.9
Hair form	1.6	1.7	1.8	2.0	1.8	1.9
Beard development	6.2	6.9	....	....	....	....
Body hair development	5.7	6.2	....	....	....	....

THE FREQUENCY AND DISTRIBUTION OF TWO TYPES IN TONGA

The Tongan material was analyzed into the same groups or types as were outlined for the Marquesans and the Samoans and by the same method. Some 40 per cent were assigned to Type I. Of the series 12 per cent were typical members of Type II and 3 more or less typically so, but with Type II predominating. The 40 per cent of mixed and unclassified individuals included 5 per cent that undoubtedly had a large Melanesian element in their make-up. The others had extremely short heads, narrow noses and narrow faces. It will be seen that the proportions I have given for Tonga do not differ materially from those I have given for Samoa. Yet, the Tongans were considerably more variable and their averages indicated a larger proportion of Type II or Melanesian admixture. The Melanesian admixture is not sufficiently important to account for the difference. It must be ascribed not to a greater number of Type II individuals, but to a less mixed group of Type II. By this I mean that a large number of the individuals whom I have assigned to Type II in Tonga have been marked and extreme representatives of that type, while in Samoa good unmixed examples of Type II were rather few. Here again it is important to know how thoroughly the two types have become mixed. The Tongan sample of 182 individuals includes representatives from nearly all parts of the archipelago. While a great majority of the individuals were from the Tongatabu group of islands, there was a goodly sample from the Vavau and Haapai groups. Type I, of course, occurs in all of the islands of the Tongan group. Type II also extends even to Eua but if this sample may be taken even roughly to indicate the composition of the population in the different islands, it indicates that Type II is considerably more frequent in Vavau and Haapai. This conclusion is substantiated by a study of both sexes. The higher

frequency of Type II in Vavau and Haapai is roughly expressed by the following tabulation of the nasal and facial indices :

NASAL AND FACIAL INDICES IN VAVAU AND HAAPAI

Average nasal index, total series of men	73.6
Average nasal index, men of Vavau	80.9
Average nasal index, men of Haapai	81.4
Average facial index, total series of men	89.9
Average facial index, men of Vavau	88.9
Average facial index, men of Haapai	88.9

These inter-island differences can be expressed in still another way. Of the 14 men with the widest noses 9 or 64 per cent of them are from Haapai and Vavau, whereas individuals from these two groups form only 39 per cent of the sample. We have here then a condition somewhat analogous to that found in the Marquesas. More specifically Type II is most concentrated in the northeastern portion of the Tongan archipelago, especially in Haano of the Haapai group.

But in Tonga as in Samoa and to a lesser extent in the Marquesas, Type I and Type II combined do not include the entire population. In Samoa and Tonga particularly there is a large remnant with very short heads, narrow faces and narrow noses, light skin color and well developed beard and body hair.

RACIAL AFFINITIES OF PHYSICAL TYPES IN POLYNESIA

A BRIEF DIGEST OF THE LITERATURE

There are those who claim that there is no Polynesian problem. Yet a search through the available literature leaves one completely at sea, not only as to the racial affinities of the Polynesians but even as to their physical characteristics. There are the greatest apparent discrepancies in the descriptions by different writers. All agree that the Polynesian is tall and has wavy hair. Beyond that there is little agreement in their characteristics. It is not my intention at this time to review in detail the mass of literature dealing with the Polynesian problem, but it is necessary to discuss briefly some of the opinions expressed in order that the two types emphasized in this paper may be designated otherwise than by numerals. It is desirable to know the extent and nature of the relationship existing between these two types and their relationships to the types of man existing outside of Polynesia.

Until quite recently it was customary to emphasize the remarkable uniformity of the Polynesians in physical type, culture, and language. Keane¹⁴ says of them:

Such are the Maori of New Zealand, the Tongans, Tahitians, Samoans, Marquesans and Ellis Islanders and Hawaiians, all of whom present a most remarkable uniformity in their physical appearance, mental qualities, customs, traditions, mythologies, folklore and religious notions. That they are one people is obvious and that they are an Oceanic branch of the Caucasian division is now admitted by all competent observers.

On this point Deniker¹⁵ also says:

Seeing that the Polynesians are distributed over a number of islands, and exist under the most varied conditions, we might expect to find a multitude of types. This is not the case. The Polynesian race shows almost the same traits from the Hawaiian Islands to New Zealand. This fact is due to constant migrations from island to island.

Even as late as 1921 Safford,¹⁶ who has spent much time among the Polynesians, emphasized the homogeneity of the Polynesians and says that the Samoans are pure Polynesians related to the Hawaiians, New Zealanders, Tahitians, Marquesans, and Easter Islanders.

Those who defend the homogeneity of the Polynesian people are divided in their opinion as to the racial affinities of the Polynesian race. Keane¹⁷ maintains that they are Caucasian in origin. This view has also been adopted by Fornan-

¹⁴ Keane, A. H., *The World's Peoples*: London, 1910.

¹⁵ Deniker, J., *The Races of Man*: London, 1900.

¹⁶ Safford, W. E., *Old and new Samoa*: *Proc. of the Anthr. Soc. of Washington*, 1921: *American Anthropologist*, N. S. vol. 23, 1921.

¹⁷ *Op. cit.*

der,¹⁸ Fenton,¹⁹ Gill,²⁰ Tregear,²¹ Giddings,²² Percy Smith,²³ Brown,²⁴ and most students of Polynesian ethnology and linguistics. Brown in particular insists upon the nordic affinities of the Polynesians.

Safford deprecates the erroneous theories repeated in recent years by popular writers asserting that the Polynesians are of Caucasian origin. He says that they are related to the inhabitants of the Moluccas and Celebes. Quatrefages²⁵ says that

Both physical and philological characters show that the Polynesians are a branch of those Malay races which are divided into numerous groups by shades of difference sometimes strongly marked. It is to one of these groups which are least distant from the white type that the nations in question (the Polynesians) must be referred. The starting point of their migrations was Boeroe Island (between Celebes and Ceram).

Pritchard²⁶ groups them with the Malays. Ellis²⁷ and Lang²⁸ emphasize their American Indian affinities. Saint-Hilaire,²⁹ Huxley,³⁰ Flower,³¹ Topinard,³² and Peschel³³ class them as mongoloid.

In one of his latest papers Giuffrida-Ruggeri³⁴ said that in his opinion the Indonesians and Polynesians were offshoots of the yellow stock, who by their insular residence have become distinct species or sub-species of man.

There are others who do not feel so certain of the affinities of the Polynesians. Oettinger³⁵ says that the racial relations in Oceania are obscure. Deniker³⁶ remarks:

It has been said and frequently repeated, though without precise documents to warrant the assertion, that the Indonesians resemble the Polynesians and the Malays the Mongols, but

¹⁸ Fornander, Abraham, *Polynesian Race*, 1870.

¹⁹ Fenton, F. O., *Suggestions for a History of the Maori People*, 1885.

²⁰ Gill, Wyatt, *Myths and Songs of the South Pacific*, 1876.

²¹ Tregear, E., *The Maori Race*, 1904.

²² Giddings, F. H., *The Principles of Sociology*, 1909.

²³ Smith, Percy, *Hawaiki*, London, 1910.

²⁴ Brown, Macmillan, *Maori and Polynesian and other recent articles in The Press*, New Zealand. 1907.

²⁵ Quatrefages, A. de., *The Human Species*, New York, 1888.

²⁶ Pritchard, W. T., *Polynesian Reminiscences*. London, 1866.

²⁷ Ellis, W., *Polynesian Researches*. 1829.

²⁸ Lang, John O., *Origin and migrations of the Polynesian nation*. 1877.

²⁹ Saint-Hilaire, Isidore Geoffrey, *Classification anthropologique: Memoirs Societe Anthropologie*. Paris, vol. 1.

³⁰ Huxley, T., *Geological distribution of mankind: Journal of the Ethnological Society of London*, new ser., vol. 2, 1870.

³¹ Flower, W., *Classification: Journal of the Anthropological Institute*, vol. 14, 1885.

³² Topinard, P., *Element. Anthropolog. General*, 1885.

³³ Peschel, Oscar. *The races of man*. New York, 1879.

³⁴ Giuffrida-Ruggeri, V., *Prime line di un' antropologia sistematica dell' Asiat Archivio per l'antro. e la etnol.* vol. 47, 1917.

³⁵ Oettinger, Bruno. *Living races of man: separate of article in the New Internat. Ency.* 1914-1915.

³⁶ Deniker, J., *The Races of Man*. London, 1900.

recent anthropological research has proved that this is not the case. The Indonesians have none of the special characters of the Polynesians. They are of very short stature, mesocephalic or dolichocephalic, while the Polynesians are very tall and brachycephalic; and if the yellow color of the skin and the nature of the hair are almost the same in the two races, the form of the nose, of the lips, of the face, as well as various other traits present notable differences.

Lyddeker³⁷ says: "They [Polynesians] are Caucasoid in origin and it is probable that the Indonesians have a slight infusion of Polynesian blood rather than the reverse." Kroeber³⁸ places them on the doubtful list and says they are "Perhaps Mongoloid with some Caucasian traits and local Negroid admixture."

But those who did intensive work in Polynesia early found it necessary to resort to a series of migrations or different influences to account for differences in culture and language. Percy Smith and Macmillan Brown have adopted the view expressed by Keane that the Polynesians were a branch of the Caucasian race who originated in North Africa and advanced from their original home in two streams, one through Europe, northern Asia and thence down through the Philippines to Indonesia and another by way of India. As nearly as I can determine they imply that the same race came into the Pacific by two different routes. Brown also traces another branch to Alaska.

Racial diversity in Polynesia has usually been attributed to Melanesian admixture. Brown has recognized this mixture and discussed its effect. Lyddekker also describes it in the Tongans and Samoans. Scott³⁹ has detected Melanesian influence in the Maori and Moriori.

But in addition the opinion has been becoming more widespread that the Polynesians are a hybrid people made up of two, three, or four elements. Haddon⁴⁰ says:

The Polynesians are a mixed people. Their original home was perhaps somewhere in Eastern India, whence shortly before our era they migrated to the East Indian Archipelago, where we may speak of them as Indonesians. The Proto-Malays were about this time pressing down south from the mainland of Asia and eventually a mixed population seems to have gone further east.

This sounds like a slight modification of Keane's view and implies that although the Polynesian is a mixed type the mixture took place before it entered Polynesia.

Ripley⁴¹ cites the Polynesians as an example of a hybrid race. He says that they are wavy-haired mongrels derived from the intermixture of straight-haired

³⁷ Lyddeker, R., *Guide to the specimens illustrating the races of mankind*: British Museum, 1921.

³⁸ Kroeber, A. L., *Three essays on the antiquity and races of man*: Univ. California Syllabus Ser. No. 119, 1920.

³⁹ Scott, J. H., *Contribution to the osteology of the aborigines of New Zealand and of the Chatham Islands*: Transactions and Proceedings of the New Zealand Institute, vol. 26, 1893.

⁴⁰ Haddon, A. C., *The races of man and their distribution*. New York.

Asiatic races with the extreme frizzled type of Melanesia in about equal proportions. Volz⁴² concluded that there was an Australoid, a western Melanesian, an eastern Melanesian, and a Polynesian race type in Polynesia. The Polynesian race is described as having three branches, an eastern branch, a western branch, and a brachycephalic branch. He arrives at this conclusion chiefly on the evidence of the cranial length-breadth and breadth-height indices. The principal difference between the eastern and western branches is that the breadth-height index of the latter is lower.

The most recent contribution is that of Dixon,⁴³ who expresses the opinion that a Negrito type underlies the Polynesian element throughout Polynesia. This is his brachycephalic, hypsicephalic, and platyrrhine type. Overlying this is a dolichocephalic, hypsicephalic, and platyrrhine type that is likened to the Melanesians and Australians. Nearly synchronous with the second type is a third type which is dolichocephalic, hypsicephalic, and leptorrhine. The affinities of this type are given as caucasoid. The latest immigrant is a brachycephalic, hypsicephalic, and leptorrhine type whose affinities are given as Malayan or Mongoloid.

The third type, dolichocephalic, hypsicephalic, and leptorrhine, is not regarded as important by Dixon. Of it he says:

Although these three fundamental types (Negrito, Melanesian, and Malayan) and their derivatives or blends comprise the great majority of the Polynesian population the indications of the presence of a small minority of a fourth fundamental type must not be overlooked: for although it itself survives only in very small proportions, some of its derivatives are not unimportant in Hawaii and New Zealand.

Dixon makes no effort to say which of these types is to be called Polynesian.

Hrdlicka,⁴⁴ in speaking incidentally of the Hawaiians, says that they do not represent a pure ethnic group, but carry in all probability the blood of yellow-brown, Indonesian, and even Melanesian and Negrito ancestry. This implies that the fundamental type is yellow-brown or Mongoloid. It should also be pointed out that Hrdlicka uses Indonesian in a different sense from that in which it is employed in this paper. He applies it to the extremely short-headed type.

Churchill⁴⁵ has likewise maintained that the Polynesians were a mixed people. Finally, the Polynesians themselves insist that they are a mixed people. While there remains no detailed descriptions of the different physical types throughout Polynesia, the natives recognize and speak of differences in skin color,

⁴² Ripley, Wm. Z., *The races of Europe*. 1899.

⁴³ Volz, Wilhelm, *Beiträge zur anthropologie der Sudsee*: Archiv. fur Anthrop., vol. 23, 1895.

⁴⁴ Dixon, R. B., *A new theory of Polynesian origins*: Proceedings of the American Philosophical Society, vol. XIX, no. 4, 1920.

⁴⁵ Hrdlicka, Ales., *Shovel-shaped teeth*: American Journal of Physical Anthropology, vol. III, no. 4, 1920.

⁴⁶ Churchill, Wm., *Separates of article on the Polynesians from Encyclopedia Britannica*.

degree of beard and body hair development, head form, and build. References to fair skins and dark skins, glabrous and hairy types, well-cared-for heads (molded) and neglected heads (normal) and heavy and slender types are common in many parts of Polynesia.

Now if it is true that there is no Polynesian problem it should at least be admitted that there is need for someone to sit in judgment and to determine which of the various opinions reviewed above is in closest accord with the facts. It will be noted that the confusion is even greater than appears at first glance, since many of the terms are used in several different senses. Indonesian in particular undoubtedly refers to a "Caucasoid" element in some instances and to a divergent Mongoloid or Negroid element in others. Malay is likewise used to mean an unmistakable Mongoloid element as well as a synonym for Indonesian. Melanesian is also sometimes used to indicate an undoubted Negro Papuan type and in other instances it is reserved for a hybrid population composed of a mixture of Polynesians and Papuans. While it is to be emphasized, of course, that these names are merely working conveniences and should ultimately be supplanted by a biological terminology, it is clear that we have reached a stage in the history of anthropology where the terms are ambiguous and confusing. When Polynesian, Indonesian, Malay and Melanesian are used it is imperative that their exact meaning should be explained. If by Indonesian, Guiffrida-Ruggeri and Deniker mean a "Caucasoid" element they are perhaps justified in including the Indonesian and Polynesians together, but if by Indonesian they mean a Mongoloid element with certain Negroid traits the inclusion certainly needs defense. The types as described but not as named by Dixon are most closely in accord with the elements of the Polynesian populations discussed in this paper.

TYPE I, CALLED POLYNESIAN

In the three samples of the Polynesian people under discussion I have emphasized particularly two well defined physical types. They differ from one another not in one or two characters, but show fundamental and marked differences in nearly all of the traits subjected to analysis. This sufficiently takes care of the thesis that they may be due to the differentiation of a common parental type within Polynesia. Their distribution also argues against this idea. It is perhaps safe to say without further argument that these two widely separated physical types came into Polynesia at different times and that whatever mixture has taken place has occurred within Polynesia.

Furthermore I have little hesitation in saying that Type I is more properly to be called the Polynesian type, although it is not brachycephalic as Deniker has declared. This type corresponds to Dixon's dolichocephalic, hypsicephalic, leptor-

rhine type which he says is *Caucasoid* in its affinities and unimportant in *Polynesia*. I should add that the *Polynesian* is not an extreme *dolichocephalic* type but it is undoubtedly this element that has furnished the crania that Dixon has described as *dolichocephalic* and *leptorrhine*. Of all the types described and mentioned above this type alone occurs in large numbers throughout the entire area and in most parts of *Polynesia* is still an important element of the population.

RACIAL AFFINITIES OF THE POLYNESIANS

It should be stated clearly that the ultimate racial affinities of this type cannot be determined wholly on the basis of somatological data. Any decision made on the basis of such data must be confirmed by craniometric and osteometric data before it may be taken as final. In my two previous papers on *Polynesia* I have analyzed the characters of the *Samoans* and *Tongans* into terms of racial affinity. I decided that on the whole the evidence was somewhat in favor of a *Mongoloid* relationship. But when the characters contributed by Type II are removed this evidence is considerably weakened. The *Polynesian* stands revealed much more *Caucasoid* in appearance. The removal of Type II removes the low nasal bridge, the excess of transversely placed nostrils, the hint of an epicanthic fold, decreases the width of the face, the thickness of the lips, the width of the nose, and increases the development of the beard and body hair. All of these increase their parallelism to the *Caucasian* type, although it should be held in mind that these *Caucasoid* traits may be due to the presence of the third extremely short-headed type. It will be necessary now to re-examine their characters in order to determine which way the bulk of the evidence points.

In an earlier paper I called attention to the characteristics of the *Polynesian* nose. I wish to emphasize again the massive diameters of their noses, even when Type II is removed. In Table LVII I have reviewed the width, height, and nasal index of mankind as a whole. This table may be taken as a fair sample of the range of these characters. It will be seen that only a few *Negro* and *Australoid* tribes exceed the *Polynesian* nose in width. On the other hand, the nasal height of the *Polynesians* exceeds that of nearly all other peoples except a few *American Indian* tribes, the *Aino*, the *Tyrolese*, *Samaritans*, and the *Ilocano*. The *Caucasian* types have much narrower noses. The highest average nasal width for a *Caucasian* type is 38 mm., yet in *Tonga*, *Samoa*, and the *Marquesas* this is the minimum nasal width. It is important to note that only some *American Indians* and the *Aino* approach the *Polynesian* nose in both diameters and these for the most part are deficient in width.

The face too is important. In Table LVIII I have reviewed the facial height, width, and index. Only a few *Eskimo* and *Indian* tribes exceed the *Poly-*

nesian face in height, but these also exceed it in width considerably so that the index is larger.

TABLE LVII. COMPARISON OF NASAL WIDTH, NASAL HEIGHT, AND NASAL INDICES

(Males only. Arranged in the order of magnitude of the nasal width.)^a

No.	Group	Nasal Width	Nasal Height	Nasal Index	Author
22	Chitrali, Turkestan	32.4	50.5	64.2	Joyce
18	Kafir, Turkestan	32.9	46.1	72.0	Joyce
28	Mastuji, Turkestan	33.6	46.7	72.5	Joyce
25	Koramas, India	34	46	75.7	Thurston
40	Sarikali	34.0	47.6	71.9	Joyce
27	Somali	34.7	49.9	69.9	Leys and Joyce
17	Tahltan	35.8	57.2	63.0	Boas
25	Znni	35.9	46.8	82.1	Ten Kate
30	Cochin Chinese	35	42	83.3	Deniker and Laloy
44	Copts, Egypt	35.9	47.8	75.8	Myers
20	Chinese, Turkestan	35.1	45.2	78.2	Joyce
25	Kota, Nilgiri, India	35	45	77.2	Thurston
25	Pakhpo, Turkestan	35.6	48.6	73.8	Joyce
19	Wakhi, Turkestan	35.8	50.4	71.3	Joyce
38	Loplik, Turkestan	35.4	47.1	75.7	Joyce
48	Ilocano, Philippines	36.5	43.0	81.8	Bean
....	Aymara	36	53	68.8	Rouma
369	Egyptian Moslem	36.6	48.3	75.8	Myers
54	Hadendoa	36.9	51.9	71.6	Seligmann
51	Beni Amer	36.6	51.9	70.5	Seligmann
80	Tyrolese	36.0	58.0	63.0	Frizzi
....	Labrador Eskimo	36.8	57.4	64.1	Duckworth
15	Hopi	36.0	46.0	78.5	Ten Kate
305	Jews, Galicia	36.0	52.0	69.2	Fishberg
140	Jews, Hungary	36.0	51.0	70.5	Fishberg
275	Jews, White Russia	36.0	52.0	69.2	Fishberg
150	Jews, Roumania	36.0	52.0	69.2	Fishberg
49	South Chinese, Hakka	36.8	47.3	77.2	Hagen
40	Brahmans, Madras	36.0	47.0	76.7	Thurston
40	Kammalans, Madras	36.0	46.0	77.3	Thurston
40	Pallis, Madras	36.0	46.0	77.9	Thurston
40	Pariahs, Madras	36.0	45.0	80.0	Thurston
25	Todas, India	36.0	47.0	74.9	Thurston
186	Nairs, Malabar	36.0	48.0	76.8	Rivers
29	Tamils, Madras	36.5	48.5	75.4	Hagen
37	Kokyar, Turkestan	36.7	50.6	73.0	Joyce
21	Karanghu-tagh	36.7	51.4	71.9	Joyce
67	Khotan, Turkestan	36.8	49.9	74.7	Joyce
31	Polu, Turkestan	36.4	49.9	73.3	Joyce
9	Bugis, Celebes	37.0	43.0	86.0	Ten Kate
12	Macassars, Celebes	37.0	44.0	84.4	Ten Kate
26	Tagalog, Sulacan, P. I.	37.0	45.0	83.2	Bean ^b
100	Zoques, Mexico	37.8	49.0	77.4	Starr
8	Trumai, S. A.	37.0	49.0	75.6	Ehrenreich
....	Kitschuas, S. A.	37.0	50.0	77.0	Rouma
150	Kharga Oasis	37.3	48.7	76.6	Hrdlicka

TABLE LVII. COMPARISON OF NASAL WIDTH, NASAL HEIGHT, AND NASAL INDICES—CONTINUED

(Males only. Arranged in the order of magnitude of the nasal width.)^a

No.	Group	Nasal Width	Nasal Height	Nasal Index	Author
6	Eastern Senoi	37.0	45.0	83.3	Martin
8	Mantra	37.0	49.0	76.8	Martin
23	Tonkinois	37.5	43.5	86.2	Deniker and Laloy
24	Kababish Arabs, Sudan	37.0	53.5	69.7	Seligmann
550	Koreans	37.6	49.1	76.6	Kubo
10	Madurese, Madura	37.9	49.2	77.0	Hagen ^b
11	Nunatagmiut Eskimo	37.6	56.3	67.0	Boas
44	Thompson	37.8	52.5	73.3	Boas
100	Mayas, Mexico	37.5	48.6	77.5	Starr
100	Chols, Mexico	37.1	48.8	76.4	Starr
315	Jews, Poland	37.0	51.1	72.5	Fishberg
219	Jews, Little Russia	37.0	53.0	69.8	Fishberg
25	Nambutiris	37.0	49.0	75.5	Rivers
35	Samaritans	37.0	55.0	66.4	Huxley
21	Hanii, Turkestan	37.8	48.4	78.9	Joyce
21	Keriya, Turkestan	37.0	45.7	81.2	Joyce
18	Niya, Turkestan	37.5	45.7	82.2	Joyce
9	Ipurina	37.5	50.0	75.0	Ehrenreich
6	Bugis, Celebes	38.2	44.0	85.7	Garrett
18	Tagalog, Pangasinan, P. I.	38.0	45.0	85.0	Bean ^b
22	Tagalog, Pampanga, P. I.	38.0	44.0	87.6	Bean ^b
22	Igorot, Benguet, P. I.	38.0	40.0	95.0	Bean ^b
85	Tinguian, Valley, P. I.	38.4	49.4	77.7	Cole
23	Deli Malay, Sumatra	38.8	47.9	81.0	Hagen ^b
18	Menengkabau, Sumatra	38.2	47.1	81.0	Hagen ^b
17	Javanese, Java	38.4	45.2	85.7	Garrett
100	Cuicatecs, Mexico	38.6	48.3	80.2	Starr
14	Kanayura, S. A.	38.0	48.2	79.0	Ehrenreich
26	Yahgan, S. A.	38.0	52.0	73.0	Deniker
121	Quichua	38.0	47.0	81.8	Ferris
10	Blandas	38.0	50.0	76.6	Martin
14	Besisi	38.0	49.0	78.9	Martin
95	Aino	38.0	55.9	68.0	Koganei
25	Dombs, Jeypur	38.0	44.0	86.5	Fawcett
35	Banjerese, Borneo	38.8	44.3	88.0	Garrett
91	Masai	38.1	50.1	76.2	Leys and Joyce
17	Sundanese	38.8	47.4	81.8	Hagen
12	Koukpagmiut Eskimo	38.6	57.3	68.0	Boas
7	Loucheux	38.6	54.3	71.0	Boas
26	Bella Coola	38.8	57.3	72.6	Boas
100	Juaves	38.1	50.3	76.0	Starr
100	Tepehuas	38.6	47.7	80.7	Starr
100	Huastecs	38.1	48.9	78.3	Starr
25	Chinese, Langhtcheoux	38.8	46.5	82.9	Girard
38	Kirghez, Turkestan	38.2	49.2	78.1	Joyce
59	Ilocano, Ilocos Sur, P. I.	39.0	53.0	72.9	Folkmar
31	Ilocano, Union, P. I.	39.0	50.0	76.6	Folkmar
24	Ilocano, Zambales, P. I.	39.0	51.0	77.5	Folkmar
17	Tagalog, Nueva Viscaya, P. I.	39.0	48.0	80.0	Bean ^b
38	Tagalog, Rizal, P. I.	39.0	48.0	82.8	Bean ^b

TABLE LVII. COMPARISON OF NASAL WIDTH, NASAL HEIGHT, AND NASAL INDICES—CONTINUED

(Males only. Arranged in the order of magnitude of the nasal width.)^a

No.	Group	Nasal Width	Nasal Height	Nasal Index	Author
20	Subanuns, Mindanao, P. I.	39.9	52.6	74.8	Christie
58	Javanese	39.0	47.0	83.0	Hagen
10	Bakairi, S. A.	39.6	47.5	83.0	Ehrenreich
14	Aueto, S. A.	39.0	51.2	76.4	Ehrenreich
15	Nahuqua, S. A.	39.2	45.4	87.0	Ehrenreich
9	Paressi, S. A.	39.2	49.6	79.0	Ehrenreich
540	Sioux	39.9	58.3	68.8	Sullivan
11	Njemps	39.2	50.4	78.2	Leys and Joyce
128	A-Kamba, Bantu	39.6	45.9	86.5	Leys and Joyce
384	A-Kikiyu, Bantu	39.9	46.0	87.1	Leys and Joyce
37	Sundanese, Java	39.1	45.1	86.9	Garrett
36	Chilcotin	39.3	53.2	74.2	Boas
15	Tsimahian	39.4	54.0	73.0	Boas
40	Kwakiutl	39.3	55.7	71.6	Boas
22	Nass River	39.8	50.6	79.5	Boas
77	Pima	39.0	48.8	81.7	Ten Kate
100	Totonacs	39.0	49.4	79.1	Starr
100	Chinantecs	39.9	50.4	79.6	Starr
100	Mixes	39.0	49.7	78.8	Starr
100	Mazatecs	39.1	48.5	80.8	Starr
80	Chontals	39.0	50.5	77.2	Starr
100	Tzendals	39.9	47.9	83.8	Starr
72	Turfan, Turkestan	39.9	47.4	78.2	Joyce
5	Semang, Perak	39.0	47.0	83.5	Martin
37	Ilocano, Ilocos, Norte, P. I.	40.0	55.0	73.1	Folkmar
34	Ilocano, Pangasinan, P. I.	40.0	52.0	76.5	Folkmar
40	Pangasinan, Pangasinan, P. I.	40.0	54.0	73.5	Folkmar
40	Pampangan, P. I.	40.0	52.0	76.2	Folkmar
26	Tagalog, Nueva Ecija, P. I.	40.0	50.0	80.4	Folkmar
28	Tagalog, Tayabas, P. I.	40.0	52.0	76.0	Folkmar
18	Bontok Igorot, P. I.	40.0	41.0	99.8	Kroeber
40	Batak, Sumatra	40.2	45.8	88.5	Hagen ^b
100	Tlaxcalans	40.1	49.4	81.6	Starr
100	Tarascane	40.1	48.0	82.6	Starr
100	Aztecs	40.0	50.0	80.5	Starr
20	Tobas, S. A.	40.8	54.1	75.4	Lehmann
424	Maori	40.1	52.8	75.9	Buck
4	Tubuai	40.5	51.2	79.7	Ten Kate
14	Tahiti	40.9	51.2	80.3	Ten Kate
13	Orang Belenus, Singei Ujong	40.0	49.0	81.5	Knocker
8	Adournas, West Africa	40.0	35.7	111.6	Deniker and Laloy
80	Dinka, Sudan	40.8	42.9	91.6	Seligmann
20	Kamasia, Nilotics	40.2	46.8	85.9	Leys and Joyce
110	Embu, Bantu	40.8	46.4	88.5	Leys and Joyce
12	Kaseri	40.3	49.1	82.8	Leys and Joyce
100	Kachanaga	40.3	45.1	89.7	Leys and Joyce
105	Tenggerese, Java	40.0	40.0	100.4	Kohlbrugge
....	Nisqa	40.1	50.8	79.5	Boas
69	Okinagan, Shuswap	40.8	55.6	74.0	Boas
30	Cowichan	40.6	56.0	71.7	Boas

TABLE LVII. COMPARISON OF NASAL WIDTH, NASAL HEIGHT, AND NASAL INDICES—CONTINUED

(Males only. Arranged in the order of magnitude of the nasal width.)^a

No.	Group	Nasal Width	Nasal Height	Nasal Index	Author
17	Papago	40.4	50.1	81.9	Ten Kate
50	Navajo	40.0	53.8	77.0	Hrdlicka
100	Chochos	40.6	49.3	82.6	Starr
100	Zapotecs	40.1	50.2	80.0	Starr
100	Mixtecs	40.6	49.9	83.1	Starr
100	Zapotecs	40.3	49.3	81.9	Starr
100	Tzotzils	40.5	48.1	84.8	Starr
18	Senoi I, Perak, S. W.	40.0	47.0	85.8	Martin
7	Senoi II, Tapah	40.0	47.0	85.8	Martin
9	Senoi III, Perak West	40.0	57.0	85.2	Martin
10	Cagayan, P. I.	41.0	50.0	81.1	Folkmar
17	Zambal, P. I.	41.0	51.0	76.7	Folkmar
25	Tagalog, Rizal, P. I.	41.0	51.0	80.5	Folkmar
32	Bicol, Sorsogan, P. I.	41.0	50.0	80.4	Folkmar
40	Bisaya, Iloilo, P. I.	41.0	49.0	84.1	Folkmar
20	Orang Kubu, Sumatra	41.4	46.7	89.0	Hagen ^b
99	Triquis, Mexico	41.1	47.7	86.5	Starr
12	Karaya, S. A.	41.5	48.4	86.6	Ehrenreich
20	Cherote, S. A.	41.4	51.9	79.8	Lehmann
40	Chiriguano, S. A.	41.9	52.5	79.8	Lehmann
5	Tuamotu	41.2	51.6	79.7	Ten Kate
4	Cook Island	41.2	49.7	85.3	Ten Kate
4	Rapanui	41.7	51.5	81.9	Ten Kate
10	Tonga	41.9	54.6	76.4	Ten Kate
7	Angolais, West Africa	41.8	39.5	104.7	Deniker and Laloy
40	Nuer, Sudan	41.2	42.5	100.1	Seligmann
37	Kavirondo, Nilotic	41.7	45.5	91.9	Leys and Joyce
29	Maricopas	41.4	49.0	85.2	Ten Kate
38	Mohave	41.6	50.7	82.2	Ten Kate
17	Yuki	41.8	49.2	85.5	Boas
100	Otomis	41.6	50.0	83.1	Starr
14	Heikum Bushman	41.0	40.0	102.5	Werner
8	Okandas, West Africa	42.0	36.0	118.3	Deniker and Laloy
53	Swahili, Bantu	42.4	48.3	87.2	Leys and Joyce
101	Wanyamwezi, Bantu	42.9	47.9	89.8	Leys and Joyce
44	Baganda	42.8	44.9	95.6	Leys and Joyce
22	Tapiro Pygmies, New Guinea	42.3	52.1	81.4	Wollaston
27	Bisayan, Capiz, P. I.	42.0	49.0	84.1	Folkmar
31	Negrito, Zambales	42.8	40.5	106.0	Reed
....	Chippewa	42.8	56.6	75.5	Hrdlicka
30	Matacos, S. A.	42.5	51.3	82.8	Lehmann
20	Bororo, S. A.	42.4	48.9	85.6	Ehrenreich
18	Bahutu	42.5	48.7	87.1	Czekanowski
28	Batwa	42.5	49.0	86.9	Czekanowski
32	Igorot, Bontoc, P. I.	42.6	52.6	79.2	Jenks
21	Sukuma	43.4	48.7	89.8	Leys and Joyce
20	Mafulu, New Guinea	43.0	51.0	83.8	Williamson
109	Shoshone	43.4	52.2	83.1	Boas
25	Maidu	43.2	49.6	87.0	Boas
31	Tanga, New Guinea	43.2	50.6	85.7	Schlaginhaufen

TABLE LVII. COMPARISON OF NASAL WIDTH, NASAL HEIGHT, AND NASAL INDICES—CONTINUED
(Males only. Arranged in the order of magnitude of the nasal width.)^a

No.	Group	Nasal Width	Nasal Height	Nasal Index	Author
79	Marquesans	43.2	53.1	81.9	Sullivan
200	Hawaiians	43.5	55.6	78.5	Sullivan
70	Samoans	43.8	59.8	73.6	Sullivan
100	Tongans	44.4	57.5	77.6	Sullivan
.....	Toricelli, New Guinea	44.0	.....	.....	Schlaginhaufen
72	Kagora, Nigeria	44.0	47.0	92.9	Tremearne
20	Borlaiva, Sudan	44.0	44.0	100.0	Talbot
21	Wadama, Sudan	44.0	44.0	100.0	Talbot
18	Humboldt Bay Papuans	44.0	53.0	83.7	Van der Sande
22	Sentani	44.0	49.0	87.9	Van der Sande
.....	Fan	44.0	48.0	91.1	Martin
20	American Negroes	45.7	49.0	92.5	Irdlicka
25	Mawambi Pygmy	45.0	49.4	91.8	Czekanowski
55	Kajji Nigeria	45.0	49.0	91.0	Tremearne
20	Ngassai, Sudan	45.0	45.0	100.0	Talbot
21	Mundong, Sudan	45.0	44.0	102.0	Talbot
21	Bagirimi, Sudan	47.0	48.0	98.0	Talbot
20	Arunta, Australians	48.0	51.0	94.0	Spencer and Gillen
....	Kaitish, Australians	51.0	48.4	106.0	Spencer

^a Since there are so many opportunities for peculiarity in technique these measurements are to be used with great care. The decimal has been disregarded in arranging them in order of their magnitude.

^b Data are known not to be strictly comparable especially in height.

TABLE LVIII. COMPARISON OF FACE HEIGHT, FACE WIDTH, AND FACIAL INDEX
(Arranged in order of the magnitude of facial height)

MALES ONLY

No.	Group	Face Width	Face Height	Facial Index	Author
14	Heikum Bushman	98.0	122.0	80.2	Werner
11	Tokea, Celebes	101.0	140.	72.	Sarasin
8	Mantra, Malay Peninsula	104	133	80.5	Martin
6	Eastern Senoi Peninsula	107	130	82.0	Martin
12	Toala, Celebes	107	139	77.0	Sarasin
6	Tomekongka, Celebes	107	138	77.1	Sarasin
22	Benguet Igorots, Philippines	107	133	81.2	Martin
18	Senoi, S. W. Perak	108	141.0	76.3	Hose & McDougall
19	Punan, Borneo	108	141.0	76.3	Hose & McDougall
21	Kayan, Borneo	108	141.0	76.9	Hose & McDougall
14	Besisi, Malay Peninsula	109	133.0	81.8	Martin
21	Mundong, Sudan	109	141.0	77.4	Talbot
....	Mawambi Pygmy	109	136.0	80.0	Czekanowski
.....	Toricelli, New Guinea	109	134.0	81.0	Schlaginhaufen
42	Land Dayaks, Borneo	109	135.6	80.0	Hose & McDougall
5	Tomuna, near Celebes	109	142.2	76.6	Sarasin
56	Sea Dayaks, Borneo	110	141.0	78.0	Hose & McDougall

TABLE LVIII. COMPARISON OF FACE HEIGHT, FACE WIDTH, AND FACIAL INDEX—CONTINUED

(Arranged in order of the magnitude of facial height)

MALES ONLY

No.	Group	Face Width	Face Height	Facial Index	Author
18	Bontoc Igorot, Philippines	110	135.0	81.0	Kroeber
5	Semang, Perak	110	135.0	84.6	Martin
99	Triquis, Mexico	101.1	140.6	(78)*	Starr
13	Batwa	110	135	80.4	Weissenberg
100	Orang Belanus, Singei Ujong.....	110	128.0	87.0	Knocker
20	Ngassai, Sudan	110	137.0	80.4	Talbot
21	Shilluk, Sudan	110.4	134.7	83.3	Seligmann
100	Mayas, Mexico	110.6	144.2	(77)	Starr
22	Tapiro Pygmies, New Guinea	110.8	130.5	85.0	Wollaston
16	Malang, Borneo	111	139.4	79.6	Hose & McDougall
38	Loplik, Turkestan	111.1	130.7	85.0	Joyce ^b
9	Senoi III, West Perak	111	135.0	82.2	Martin
8	Trumai, South America	111	131.3	85.0	Ehrenreich
9	Ipurina, South America	111	138.1	80.3	Ehrenreich
21	Wadama, Sudan	111	140	79.8	Talbot
20	Mafulu, New Guinea	112.2	138.8	80.8	Williamson
100	Tzendals, Mexico	112.1	140.8	(80)	Starr
10	Blandas, Malay Peninsula	112	133	84.6	Martin
100	Cuicatecs, Mexico	112.5	139.1	(81)	Starr
29	Tamils, Madras	112	129.7	83.9	Hagen
28	Mastuji, Turkestan	112	119.9	93.2	Joyce
21	Keriya, Turkestan	112.5	134.4	83.2	Joyce
18	Niya, Turkestan	112.4	129.5	87.0	Joyce
26	Kenyah, Borneo	112	145	77.2	Hose & McDougall
24	Bugis, Celebes	112.3	136.5	82.4	Sarasin
20	Orang Kubu, Sumatra	112	136.0	82.3	Hagen
40	Sarikoli, Turkestan	112.6	125.7	89.6	Joyce
18	Kaffir, Turkestan	112.7	116.0	97.0	Joyce
80	Dinka, Sudan	112.8	135.8	86.0	Seligmann
100	Mazatecs, Mexico	112.9	142.1	(80)	Starr
150	Kharga Oasis	113.5	131.5	86.3	Hrdlicka
....	Papuan	113.0	139.0	(81)	Weissenberg
17	Sundanese, Java	113.8	138.9	82.0	Hagen
100	Mixtecs, Mexico	113.5	142.5	(79)	Starr
100	Tepihuas, Mexico	113.7	142.1	(80)	Starr
100	Huastecs, Mexico	113.4	141.9	(80)	Starr
80	Chontals, Mexico	113.7	141.7	(80)	Starr
100	Zapotecs, Mexico	113.5	141.0	(81)	Starr
100	Chols, Mexico	113.2	141.2	(80)	Starr
100	Tzotzils, Mexico	113.3	140.9	(80)	Starr
20	Borlawa, Sudan	113	136	83.0	Talbot
14	Kamayura, South America	114.0	131.8	86.4	Ehrenreich
369	Egyptian Moslems	114.5	143.6	(80)	Myers
44	Egyptian Copts	114.7	136.6	(84)	Myers
100	Chochos, Mexico	114.9	144.0	(80)	Starr
99	Zapotecs, Mexico	114.8	142.4	(81)	Starr
100	Otomis, Mexico	114.1	140.7	(81)	Starr
25	Pakhpo, Turkestan	114.6	125.6	91.2	Joyce
38	Khirgiz, Turkestan	114.1	145.0	78.9	Joyce

TABLE LVIII. COMPARISON OF FACE HEIGHT, FACE WIDTH, AND FACIAL INDEX—CONTINUED
(Arranged in order of the magnitude of facial height)

MALES ONLY

No.	Group	Face Width	Face Height	Facial Index	Author
7	Senoi II, Tapah	114.0	132.0	85.8	Martin
72	Kagora, Nigeria	114.0	123.0	93.0	Tremearne
22	Sentani, Papuans	114.0	141.0	(81)	Van der Sande
100	Tarascan, Mexico	115.0	139.1	(83)	Starr
100	Aztecs, Mexico	115.6	138.1	(84)	Starr
14	Austo, South America	115.6	134.2	86.0	Ehrenreich
100	Totonacs, Mexico	115.9	145.3	(80)	Starr
100	Chinantecs, Mexico	115.6	145.0	(80)	Starr
38	Tagalog, Rizal, Philippines	115.0	134.0	85.7	Bean
40	Batak, Sumatra	115.1	140.6	82.0	Hagen
19	Wakhi, Turkestan	115.0	128.0	89.4	Joyce
31	Polu, Turkestan	115.4	139.7	83.5	Joyce
55	Kajji, Nigeria	115.0	139.0	(83)	Tremearne
....	Australians, Kaitish	115.0	134.0	86.0	Spencer
550	Koreans	115.0	144.3	80.1	Kubo
100	Tlaxcalans, Mexico	116.3	140.1	(83)	Starr
15	Nahuqua, South America	116.3	130.5	88.0	Ehrenreich
9	Paressi, South America	116.8	135.6	86.0	Ehrenreich
121	Quichua, South America	116	141	82.9	Ferris
100	Juaves, Mexico	116.2	145.0	(80)	Starr
100	Mixes, Mexico	116.8	143.5	(81)	Starr
56	Javanese	116.2	141.5	82.1	Hagen
18	Menangkabau, Sumatra	116.5	140.2	83.1	Hagen
22	Chitrali, Turkestan	116.9	121.9	96.2	Joyce
21	Hami, Turkestan	116.7	127.6	91.7	Joyce
10	Bakairi, South America	117.0	132.2	89.0	Ehrenreich
23	DeliMalay, Sumatra	117.9	137.9	85.5	Hagen
20	Chinese, Turkestan	117.2	127.3	92.7	Joyce
37	Kokyar, Turkestan	117.9	129.3	92.7	Joyce
21	Karanghu-tagh	117.2	131.2	89.4	Joyce
72	Turfan, Turkestan	117.9	131.8	89.4	Joyce
67	Khotan, Turkestan	117.4	136.0	86.3	Joyce
51	Beni Amer	117.7	127.8	92.1	Seligmann
109	Shoshone	118.7	147.5	80.5	Boas
43	San Carlos Apache	118.0	149.0	78.8	Hrdlicka
17	Yuki	118.0	146.6	80.5	Boas
21	Bagirimi, Sudan	118.0	140.0	84.5	Talbot
18	Humboldt Bay, Papuans	118.0	142.0	(83)	Van der Sande
24	Kababish Arabs, Sudan	118.7	134.3	88.8	Seligmann
20	American Negroes	119.0	139.7	73.5	Hrdlicka
44	Thompson	119.4	146.2	81.6	Boas
305	Jews, Galicia	119.0	132.0	90.1	Fishberg
140	Jews, Hungary	119.0	136.0	87.5	Fishberg
315	Jews, Poland	119.0	132.0	90.1	Fishberg
275	Jews, White Russia	119.0	135.0	88.1	Fishberg
54	Hadendoa	119.7	129.0	92.8	Seligmann
20	Bororo, South America	120.8	147.1	82.0	Ehrenreich
10	Madurese, Madura	120.0	140.0	85.2	Hagen
....	Nisqua	120.5	156.5	77.0	Boas

TABLE LVIII. COMPARISON OF FACE HEIGHT, FACE WIDTH, AND FACIAL INDEX—CONTINUED
(Arranged in order of the magnitude of facial height)

MALES ONLY

No.	Group	Face Width	Face Height	Facial Index	Author
22	Nass River	120.5	155.8	77.0	Boas
50	Navajo	120.0	147.0	82.0	Hrdlicka
219	Jews, Little Russia	120.0	137.0	87.6	Fishberg
150	Jews, Roumania	120.0	135.0	88.8	Fishberg
49	South Chinese, Hakka	120.0	141.0	85.3	Hagen
63	Kamtschatka	120.0	143.5	83.3	Brodsky
20	Chorote	121.3	137.9	88.0	Lehmann
30	Matacos	122.8	141.0	87.1	Lehmann
40	Chiriguano	122.7	140.6	87.3	Lehmann
7	Loucheux	122.9	148.6	83.0	Boas
15	Tsimshian	122.3	150.7	80.7	Boas
25	Maidu	122.6	145.7	84.0	Boas
....	Germans	123.0	140.0	(88)	Weissenberg
69	Okinagan	123.0	149.2	83.6	Boas
53	Pima	123.0	145.0	84.6	Hrdlicka
52	Tungus, Gischiga	123.0	146.3	84.4	Brodsky
....	Chippewa	124.5	151.5	83.7	Hrdlicka
20	Tobas, South America	124.4	140.6	88.5	Lehmann
540	Sioux	124.6	149.1	83.6	Sullivan
79	Marquesan	124.1	143.2	87.0	Sullivan
424	Maori	124.0	145.7	85.1	Buck
36	Chilcotin	124.3	148.2	83.9	Boas
95	Aino	124.9	143.8	86.9	Koganei
70	Yukaghir	124.0	145.5	86.0	Brodsky
173	Koryak, Gischiga	124.0	146.2	85.5	Brodsky
12	Karaya, South America	125.2	140.0	89.4	Ehrenreich
200	Hawaiian	125.4	144.5	86.9	Sullivan
18	Timneh	125.5	146.0	85.1	Boas
35	Samaritans	125.0	132.0	94.4	Huxley
26	Bella Coola	126.9	152.6	83.6	Boas
30	Cowichan	126.4	159.9	79.2	Boas
80	Tyrolese	126.0	142.0	87.1	Frizzi
....	Labrador Eskimo	127.0	141.7	89.0	Duckworth
77	Pima	127.5	145.2	86.8	Ten Kate
100	Tongan	128.2	143.5	89.2	Sullivan
11	Nunatagmiut Eskimo	128.4	155.7	82.0	Boas
148	Chukchi	128.0	146.3	88.0	Brodsky
17	Tahltan	129.2	150.9	85.0	Boas
40	Kwakiutl	129.1	150.4	86.9	Boas
29	Maricopas	129.9	149.7	87.4	Ten Kate
12	Koukpagmiut Eskimo	131.5	147.8	89.0	Boas
80	Samoans	131.1	145.9	89.9	Sullivan
60	Asiatic Eskimo	132.0	147.6	88.6	Brodsky

^a Number in () are indices derived from the average height and the average width of face.

^b It is not certain that face width in these Turkestan data is strictly comparable with face width of other observers.

The measurements given in Table LVIII show that, on the whole, the Tyrolese face is like that of the Polynesian, but the nose and head proportions are quite different and that the Aino face has nearly the same diameters as the Polynesian. In Table LIX I give the details for several groups that approach the Polynesian in nose and face diameters and proportions. It will be seen that the Aino type approaches more nearly the Polynesian than do any of the other types. The greatest differences are in stature, minimum frontal, and nasal width and the resulting indices. The American groups are quite markedly different in face width, the Papuan type (mixed) is most strikingly different in facial height; and the Caucasian is deficient in nasal width and the cephalic diameters.

While these characters alone are not sufficient to establish the relationship between the Aino and the Polynesian they are suggestive, and I hope in another paper to demonstrate on the basis of craniometric and osteometric data the degree of relationship existing between these two people.

It is clear, however, that the Polynesian approaches the Caucasian in some respects and the Mongols or Yellow-Browns in others. The skin pigment, even when the darker tints of Type II are removed, is still more on the yellow-brown shades than is that of most unmistakable Caucasians. While the hair form is still somewhat doubtful, it is certain that there is little or none of the stiff, coarse hair of the Mongol in Polynesia. In almost every individual there is also a suggestion of brown in the hair pigment in certain lights. While the hair is not so well developed on the face and body of the Polynesian as it is on most Caucasians, it is still considerably nearer the Caucasoid norm than it is to the Mongol norm. But curiously enough, so far as it can be determined at the present time, the enamel rim on the upper incisor teeth is more frequent in Type I than it is in Type II. A high frequency of this enamel rim is distinctive of Mongoloid groups only. Although its frequency cannot be said to be high in this instance, yet it is rather unexpected to find it more Caucasoid of the two types.

TABLE LIX. COMPARISON OF POLYNESIANS (TYPE I) WITH OTHER GROUPS

	Marquesan Polynesian (Type I)	Aino [Koganei]	Sioux [Sullivan]	Chippewa [Hrdlicka]	Humboldt Bay Papuan van der Sande	Tyrolese [Frizzi]	Toba [Lehmann]
Stature	171.0	156.7	172.4	171.9	163.3	167.3	169.8
Head length	195.0	193.7	194.9	199.0	190.0	185.0	188.1
Head width	151.0	149.7	155.1	158.0	148.0	159.0	148.4
Minimum frontal	102.1	107.6	.....	.....	105.0	109.0	.....
Face width	141.7	143.8	149.1	151.5	142.0	142.0	140.6
Bigonial	109.4	.....	.....	.....	102.0	109.0	108.7
Face height	129.4	124.9	124.6	124.5	118.0	126.0	124.4
Nasal height	56.2	55.9	58.3	56.6	53.0	58.0	54.1
Nasal width	42.7	38.0	38.9	42.8	44.0	36.0	40.8
Cephalic index	77.6	77.3	79.6	79.6	77.9	85.8	78.9
Cephalo-facial index.....	94.0	(96)	96.1	(96)	(96)	(89)	94.5
Facial index	91.3	86.9	83.6	83.7	(83)	87.1	88.5
Nasal index	76.6	68.0	68.8	75.5	83.7	63.0	75.4
Number	28	95	54.0	.....	18	80	20

TABLE LX. SUMMARY OF THE RACIAL AFFINITIES OF THE POLYNESIANS

Character	Distinctly Caucasoid	Approach the Caucasian norm	Intermediate Approach the Mongoloid norm	Distinctly Mongoloid	Non Distinctive
Skin pigment (light brown).....	x	....	....
Hair form (wavy).....	x	....	....	....
Hair texture (moderately coarse).....	x	....	....	....
Hair color (black with brown tint).....	x	....	....	....
Development of the beard (medium).....	x	....	....	....
Development of body hair (medium).....	x	....	....	....
Enamel rim on upper incisor teeth (med.).....	x	....	....
Elevation of nasal bridge (above medium).....	x	....	....	....
Thickness of lips (medium).....	x	....	....	....
Lack of prognathism	x	....	....	....
Chin development (above average).....	x	....	....
Form of palpebral fissure (open horizontal).....	x	....	....	....	....
Absence of eyefold.....	x	....	....	....	....
Nostrils (oblique)	x	....	....
Eye color	x
Minimum frontal diameter (small).....	x	....	....
Face width (medium)	x	....	....
Face height (great)	x	....	....
Bigonial diameter (great)	x	....	....
Nasal height (great)	x
Nasal width (great)	x	....	....
Cephalo-facial index (medium)	x	....	....
Nasal index (medium)	x	....	....
Totals	23	2	8	11	0
Per cent	9	35	47	0

The highly arched, long, narrow nose is usually looked upon as one of the most distinctive characters of the Caucasian types. Although the Polynesian nose is much more massive, yet it approaches to some degree the Caucasian type of nose. But it should be remembered that many American Indian groups have approached the Caucasian norm more closely. The chin also is fairly well developed in the Polynesian and there is little or no prognathism. At present it would seem that the trace of a Mongoloid fold recorded in Polynesia was brought in by another type and that the Polynesian has a wide open Caucasoid palpebral fissure, horizontally placed. The conjunctival pigment is also probably due to Type II. The nostrils of the Polynesian are not Caucasoid, but are much nearer that norm when the markedly oblique and transverse nostrils of Type II are removed. The face is more massive than the face of most Europeans. This is also true of the bigonial diameter. The frontal diameter is also somewhat deficient for a Caucasian type.

I have summarized these statements in Table I.X. Of the 23 characters discussed two are pretty close to the Caucasoid norm and more are closer to the Caucasoid than to the Mongoloid norm. Of these 11 approach the Mongoloid norm, but none are unquestionably Mongoloid. In brief, the evidence seems to be fairly evenly balanced and points to a type intermediate between the Caucasians and the Mongols. If anything, the evidence rather favors a closer Caucasian relationship. Our decision hinges somewhat upon the classification of certain doubtful Asiatic and American types. If we are to accept all of the American Indians as Mongoloid, there would be little difficulty in classifying the Polynesians also as Mongoloid.

It is certainly true that superficially the bulk of the evidence indicates that the Polynesian is slightly closer to the generally accepted Caucasoid norms than to the generally accepted Mongoloid norms. The burden of proof falls upon those who defend a theory of a Mongoloid origin of the Polynesians. Such a point of view is only possible on the assumption that the Caucasians and the Mongoloid stocks are very closely related and that the primitive Mongoloid stock gave rise to the Caucasian stem. It was upon such a basis that Boas defended the Mongoloid origin of all of the American Indians. His view was that the Negro and the Mongoloid races were the fundamental races and that all other races or types are mutations from these. The Malays, Aino, and Caucasian types are regarded as mutants from the primitive Mongoloid race.

In the light of modern studies this theory seems a fair approximation to what has taken place. The cleavage between the whites and negroes is everywhere clearer than that between the Mongols and whites.

If then the Polynesian is not to be regarded as a true Caucasian, he is to be regarded as at least a decided step in that direction. The Polynesian, Aino, and certain American Indians may egotistically be looked upon as unsuccessful attempts of nature to make a Caucasian. If they are not true Caucasians, they branched off near the stem of the Caucasian type. If they are not Caucasians, it was some type closely related and resembling the Polynesian that gave rise to the Caucasoid types. If they are not true Caucasians, there are undoubtedly descendants of this or closely related types in Europe who pass for Caucasians.

This somewhat uncertain and unsettled classification of the Polynesian must stand for the present. When all the osteometric and craniometric evidence is in it will be undoubtedly possible to make a more satisfying statement of their status.

TYPE II, PROBABLY INDONESIAN

I turn now to a consideration of that second type which is unquestionably responsible for much of the confusion of ideas and opinions upon Polynesian ethnology, linguistics, and physical type. This type has undoubtedly passed for Polynesian for many students. It is responsible for many theories of a Melanesian and Indonesian relationship of the Polynesians. In Table XLII it was shown that this type was characterized by a dark brown skin, wavy hair, a scant beard and body hair development, a low frequency of the incisor rim, moderately short heads, low faces, low broad noses, thick lips, with slightly oblique palpebral fissures, and often a suggestion or trace of the Mongoloid fold.

So far as our anthropometric data are concerned, the most striking differences are in facial index and nasal index. Type II is characterized by a very broad and very low nose, its width being approximately 44 mm. Referring back to Table LVII, it will be seen that such a nose is found only in certain Negroid, Australoid, Indonesian, and proto-Malayan groups. A few American Indian groups have noses which approach this type fairly closely. The face also is low and wide. Again from Table LVIII it will be seen that low broad faces are characteristic of Negroes, Australoids, Indonesians, and some Malay and American Indian groups. The form of the hair removes the typical negroes from further consideration. Practically no woolly hair occurs in Polynesia. At least it is not of sufficient importance and frequency to account for Type II. The Australoids are characterized by very long heads, a much darker skin and more curly hair as well as a slender build. This also justifies our removal of them from further discussion. Since it is unlikely that America has contributed to the direct settlement of Polynesia, the American Indians may also be omitted from further discussion. It is sufficient to indicate here that these characters are as badly in need of explanation in America as in Polynesia. There remains only the Indonesians and the proto-Malayans to account for the low

broad faces, the low broad noses, the thick lips, the dark skins, and the wavy hair. It must be admitted that the characteristics of the Indonesians, proto-Malayans, and the more recently recognized Australoids are badly confused. Many Indonesian types have been described as Australoid and many proto-Malay types as Indonesian. But the consensus of opinion seems to be that proto-Malayan should be reserved for the more distinctly Mongoloid types with a broad nose and straight black or very slightly waved hair. Indonesian is reserved for the more Negroid of two types. Type II of this series is decidedly Negroid in those characters in which it departs from the Mongoloid norm. It does, however, depart radically from the ordinary conception of the Indonesian in two traits: stature and cephalic index. The Indonesian is typically of very short stature, while the Type II isolated here proved to be well above average stature. This may be due to intermixture in part. Intermixture of two radically different race groups seems to raise the stature of the resulting hybrid offspring. This has been demonstrated by Fischer for the Bastards of South Africa and by Boas on the American Indian. It is also true of some of the more recent and known intermixture in Polynesia. Stature is not one of the best characteristics of race. The head of Type II is also shorter than that of many recognized Indonesians. But Guifrida-Ruggeri has recognized a long and a short headed Indonesian type. For the present we are justified in assuming that Type II is Indonesian. At least it approaches very closely several of the members of Guifrida-Ruggeri's brachymorphic Indonesian type.

RACIAL AFFINITIES OF THE INDONESIAN TYPE IN POLYNESIA

I have listed in Table LXII the principal diameters of the Indonesian element (Type II) in Polynesia and those of several groups which approach this type in face and nose form. Data from Malaysia where we need it most are sadly deficient and of very poor quality. Very few detailed studies have been made or at least been reported upon. Most observers have been satisfied to list the average stature, cephalic and nasal indices. The Kanyah of Borneo parallel our Type II very closely, but have somewhat longer heads and are shorter in stature. The Malang of Borneo and Battak of Sumatra are not so extremely divergent. Due no doubt to the absence of better data from Indonesia some of the closest parallels are in certain divergent American Indian groups with low faces and broad noses. The Bororo of South America and the Pomo of California are not very different in their anthropometric traits. Again I wish to emphasize that these results are to be regarded as suggestions only. Before declaring a relationship between two such widely separated groups as this Indonesian type and any of the groups given in Table LXI it would be necessary to have these indications confirmed by craniometric and osteometric data.

TABLE LXI. COMPARISON OF THE INDONESIANS (TYPE II) WITH OTHER GROUPS

	Marquesan Indonesian (Type II)	Kenyak Borneo [Hose and McDougall]	Malang Borneo [Hose and McDougall]	Batak [Hagen]	Bororo [Lehmann]	Pomo [Boas]	Yuki [Boas]	Maidu Foot Hills [Boas]
Stature	170.6	160.8	153.5	159.9	173.6	168.2	159.0	164.4
Head length	191.5	193.0	193.0	186.6	190.3	190.1	195.2	194.0
Head width	155.6	153.0	147.0	149.8	154.5	154.0	148.3	153.5
Minimum frontal	102.7							
Face width	145.8	145	139.4	140.6	147.1	148.8	146.6	145.7
Bigonial	108.8				109.3			
Face height	116.3	113	111	115.1	120.8	120.0	118.0	122.6
Nasal height	49.8			45.8	48.9	48.2	41.8	49.6
Nasal width	43.9			40.2	42.4	46.0	49.2	43.2
Cephalic index	81.3	79.9	76.9	80.3	81.2	81.0	77.6	79.1
Cephalo-facial index	93.7	(95)	(94)	(94)	(95)	(97)	(99)	(95)
Facial index	79.2	77.2	79.6	82.0	82.0	81.0	80.5	84.0
Nasal index	88.7	92.7	88.2	88.5	85.6	96.0	85.5	87.0
Number	17	26	16	40	20	6	17	25

TABLE LXII. SUMMARY OF THE RACIAL AFFINITIES OF THE INDONESIANS IN POLYNESIA (TYPE II)

Characters	Mongoloid	Approach the Mongoloid norm	Approach the Negroid norm	Negroid	Not distinctive
Skin pigment (dark brown).....	x	....	....
Hair form (wavy).....	x	....	....	....
Hair texture (moderately coarse).....	x
Hair color (black).....	x
Development of the beard (sparse).....	x
Development of body hair (sparse).....	x
Enamel rim on upper incisor teeth.....	x	....	....
Elevation of nasal bridge.....	x
Thickness of lips	x	....	....
Prognathism (slight)	x	....	....	....
Chin development (very moderate).....	x	....	....	....
Form of palpebral fissure (narrow and oblique)	x	....	....	....
Eyefold (in incipient degree).....	x	....	....	....
Nostrils (transverse)	x	....	....
Eye color and conjunctival pigment.....	x	....	....
Minimum frontal diameter (narrow).....	x	....	....	....
Face width	x	....	....	....
Face height	x	....	....
Facial index	x	....	....
Bigonial diameter	x	....	....	....
Nasal height	x	....	....
Nasal width	x	....	....
Nasal index	x	....	....
Cephalo-facial index	x
Totals	24	0	8	10	0
Per cent		0	33	42	0

In Table LXII I have attempted to analyze the characteristics of Type II into terms of racial affinity. While it is usual to regard the Indonesian as Mongoloid, its Negroid characters are striking. Many of the more characteristic Mongoloid characters such as the enamel rim on the upper incisor teeth, the coarse, straight, black hair, and epicanthic fold are absent or developed only to a very slight degree. They are not prognathous to a marked degree, but the chin is not so well developed as in many Mongoloid types. The short face, short wide nose with low bridge and a high percentage of transversely placed nostrils, thick lips and dark skin approach very closely the Negro norm. Were it not for their non-woolly hair they would pass for Negroes. Even with their wavy hair they have often been mistaken for Negroes or Negritos, not only in Polynesia, but also in Indonesia. This type answers roughly to Dixon's brachycephalic, hypsicephalic, and platyrrhine type which he has identified as Negrito. At present I am not in a position to urge that these two types are identical. It does seem unlikely, however, that there are two brachycephalic, broad-nosed groups in Polynesia. But this question must be answered on the basis of the crania which gave rise to it.

The ultimate relationship of this second type must also be left to future study. I can only say that it is commonly regarded as Mongoloid in its affinities. This may be due to the fact that it would be decidedly unorthodox to call a non-woolly haired type Negroid.

RELATIONSHIP OF THE TWO TYPES

It will be of some interest to investigate the probable degree of relationship existing between the two types, the Polynesians and Indonesians, in Polynesia. Most systems of classification place the Polynesian and the Indonesian close together. Deniker has done this in his scheme as has also Guiffrida-Ruggeri in his latest classification. This is largely a result of the great synonymy in our anthropological terminology and to the fact that there are several types in Polynesia and in Indonesia. One school has used the term Indonesian to describe a type in Indonesia not unlike the Polynesian. More frequently Indonesian has been used for a divergent Mongoloid type with a broad nose and low face and other Negroid traits. This type has also representation in Polynesia as I have shown in this paper. In brief, one school has been calling Polynesian the Indonesian type in Polynesia and the other has been calling Indonesian a Polynesian type in Indonesia. Except on this basis there is no other explanation for theories of close relationship between the Polynesian and the Indonesian. As I have just indicated, they have little in common except perhaps (but doubtfully) hair form and the fact that both may be somewhat hesitatingly classified as divergent Mongols, the one in the direction of the Caucasian and the other in the direction of the Negro. This somewhat doubt-

ful and certainly distant relationship is indicated by their great divergence in nearly every trait studied. The Indonesian is the antithesis of the Polynesian in face form, head form, and nose form. It is also separated in degree of pigmentation, thickness of the lips, beard and body hair development, and eye form.

A POSSIBLE THIRD TYPE

It has been shown that there are at least two types in Polynesia, the one that I have called Polynesian corresponding roughly to Dixon's dolichocephalic, hypsicephalic, and leptorrhine type and the one which I have called Indonesian corresponding somewhat less certainly to Dixon's brachycephalic, hypsicephalic, platyrrhine Negrito type. But we found that in Samoa and Tonga these two types accounted for at most only about 60 per cent of the population and even in the Marquesas there was a large residue that could not be attributed to either of the two types discussed in detail in this paper. There was in the population at least one other element apparently characterized by extremely short heads. It is impossible to account for the extremely short-headed types in Polynesia on the basis of these two types. Furthermore, the extremely short-headed individuals approach the Polynesians more nearly than they do the Indonesian in face, nose, and hair characteristics. So far is this true that it has been suggested by Brown and others that they are Polynesians with artificially deformed heads. With these short heads are associated narrow faces and narrow noses, well developed beard and light skin color. This type is most frequent in Tonga, somewhat less so in Samoa, and still less so in the Marquesas. It undoubtedly corresponds to Dixon's brachycephalic, hypsicephalic, and leptorrhine type. Dixon has indicated that this is a Malayan type. It is also unquestionably to this element in Polynesia that Elliot Smith⁴⁶ refers to as proto-Armenoid. Brown also believes this to be a special type, although he maintains that the occiputs are artificially flattened. Both Brown and Elliot Smith maintain that the custom was introduced by the people now practicing it. So far I have not been able to assign to it enough traits to enable me to isolate it as a distinct type. A consideration of this type can best be left for consideration in the Hawaiian paper of this series, since we have a more abundant material from Hawaii and it is evident that the extremely short-headed type is a dominant element in the living population of the Hawaiian group. At first I was strongly inclined to regard this element as Polynesians with artificially deformed heads, as suggested by Brown, and others, but many things, including the distribution of this element, argue against this as the correct solution of the problem.

⁴⁶ Smith, G. Elliott, *The ancient Egyptians and their influence upon civilization of Europe*: New York, 1911. Also articles in *Science*, new ser., 1917-1918.

SUMMARY

The modern "Polynesians" of the Marquesas, Samoa and Tonga are a mixed people. This fact accounts for the great diversity of opinion regarding their racial origins and affinities. In addition to the Polynesian population there is a second type resembling the Indonesian peoples of Malaysia, and a third extremely short-headed element. This paper deals mainly with the Polynesian and Indonesian types. The unrecognized presence of the Indonesian type has given rise to the theories of Indonesian affinities of the Polynesian people.

When the Indonesian element is removed, the Polynesian is more strikingly Caucasoid. Some of the Caucasoid traits of the Polynesians may be due to the presence of a third type not yet isolated. At present it seems best to regard the Polynesian type as an offshoot of the primitive Mongoloid stem, very close to where some Caucasians branched off.

The Indonesian type is usually regarded as Mongoloid also but is strongly divergent in the direction of the Negro. The resulting hybrid of the Polynesian and Indonesian types is much more Mongoloid in appearance than is either of the parental types.

The Polynesian and Indonesian types cannot be considered as close relatives in a physical sense. Indeed, their only claim for relationship is that both may be somewhat hesitatingly classed as divergent Mongols. But even if such a classification is eventually proved to be justified, the relationship is a very distant one.

In the Marquesas are marked inter-island differences in the distribution of these two types. The Indonesian type is for the most part confined to the islands of Ua Huku, Nuku Hiva, and Ua Pou. The Polynesian is also present in these islands, but is much less mixed with the Indonesian element in the southern islands of the group: Tahu Ata, Fatu Hiva, and Hiva Oa. In Tonga also the Indonesian element is much more concentrated in the northern island groups, Haapai and Vavau, but especially in Haano. No certain inter-island differences were found in Samoa.

These two types do not exhaust the possibility of finding other physical types in Polynesia. There is unmistakable evidence of Melanesian influence, particularly in Tonga. The Indonesian type has many Negroid characteristics, which have lead to an exaggerated opinion as to the amount of Melanesian blood in Polynesia.

In addition there is an extremely short-headed element in Polynesia, referred to by Dixon as Malayan; by Elliot-Smith as Proto-Armenoid; and by others as Indonesian, or Alpine. Apparently it is this element of the population that Deniker refers to as Polynesian. At present its claim to distinction as a separate type seems to consist chiefly of extremely short heads, associated with narrow faces,

narrow noses, light skin and well developed beard and body hair. As yet I have not been able to establish a sufficiently large group of associated characters to warrant its discussion. It seems probable, however, that this type may account for some of the Caucasoid traits of the Polynesians. This, as well as many other phases of the Polynesian problem, needs further study in the areas in which the people are more characteristic of this type.

In a marginal area like Polynesia it is possible to find individual representatives of nearly all the races living in and around the Pacific. A study of the photographs in this and other papers on Polynesia will show that this possibility is realized to some extent in the Marquesas, Samoa, and Tonga. but to discuss them at present would be to magnify their importance. I have confined my efforts to those types whose presence could be unmistakably demonstrated in sufficient number to warrant the assumption that they had played an important part in the history or prehistory of Polynesia. I am not at all sure that I have isolated all of these elements even, in the three island groups considered here. Furthermore, it is probable that future studies may result in some modification in the characteristics I have assigned to the two main types discussed in this paper. The relative proportions of the different types given in this paper are of course tentative for it is only when it has been possible to reconstruct the various elements of the population in detail that it will be practicable to give definite estimates of their relative frequencies.

In order that this paper may be of greater permanent value to those who do future work in Polynesia, or who may be inclined to carry my analysis further, I have presented the data and analyses in considerable detail. The extent of this detail may discourage those whose interest is only casual from hunting for the points which may be of special interest to them. For this reason I will briefly recapitulate the points of more general interest and indicate the section of the paper in which more detail on these points can be found.

The Marquesan material when seriated shows no tendency to form normal frequency distributions. The bimodal tendency encountered in Tonga is here encountered in an extended and exaggerated degree. Nearly every character is bimodal or multimodal. The range is enormous especially in the nasal, facial and cephalic indices. (See p. 145.) This condition is emphasized by the standard deviations and coefficients of variation which are greatly in excess of those for the Samoan and Tongan data. (See p. 165.)

The Marquesans differ somewhat in their average characters from the Samoans and the Tongans. Their hair is more wavy, their skin is darker, they are more glabrous, they have more transversely placed nostrils, the enamel rim on the incisor teeth is less frequent, they are shorter in stature, have longer heads, their

faces are narrower, but markedly lower, their bigonial diameters are greater and their noses are narrower and lower. (See p. 160.)

In the three southeastern islands of the group (Fatu Hiva, Tahu Ata, and Hiva Oa) the average stature is less, the minimum frontal diameter is less, the face width is smaller, but the height is much higher, the nose is higher and narrower than in the northwestern islands of the group. The skin color is lighter also. The differences are too great and far-reaching to be considered as local differentiation and indicate a non-homogeneous group. (See pp. 165-8.)

A detailed analysis showed two main tendencies in the association of characters which I have designated as follows:

TYPE I	TYPE II
Characterized by:	Characterized by:
1. Taller stature	1. Shorter stature
2. Longer heads	2. Shorter heads
3. Higher faces	3. Lower faces
4. Narrower noses	4. Wider noses
5. Straighter hair (?)	5. More wavy hair (?)
6. More beard	6. Scant beard
7. More body hair	7. Scant body hair
8. Lighter skin color	8. Darker skins
9. More frequent incisor rim	9. Infrequent incisor rim. (See p. 187)

On the assumption that the cephalic, facial, and nasal indices were the most distinctive anthropometric traits of these two types, the individuals were analyzed and classified as Type I, Type II or mixed and unclassified. That this analysis and classification was partly successful is indicated by the resulting averages of these groups. Marked and certain differences were found in twenty of the twenty-four characters studied. They emphasize the difference in the facial and nasal indices which amount to 12 points or more on the average. The differences in head form are less marked. Type I is mesocephalic and Type II is slightly brachycephalic. Type II also has thicker lips and less wide open eyes than Type I.

Type I occurs in all of the islands, but is least mixed in Tahu Ata, Fatu Hiva, and Hiva Oa. Type II is the dominant type in Nuku Hiva, Ua Huku, and Ua Pou. There is a residue of extremely short heads that are not accounted for by either or both of these types. (See p. 188.)

A re-analysis of the Samoan material shows that Type I is an important type, but that Type II is also present here to some extent. The gap between the two types is not so wide as in the Marquesas. This is taken to mean that Type II has never been so important numerically in Samoa or has been pretty thoroughly mixed with Type I or perhaps both of these things. No apparent inter-island differences occur in the frequency of these two types. But since the sample was mainly from Upolu this cannot be taken as final. In Samoa also there is a still larger residue of extremely short heads. (See p. 202.)

A more detailed analysis of the Tongan data indicates that Type II is also present in Tonga. The presence of this type which has many Negroid characters is responsible for much of the heterogeneity attributed to Melanesian influence in a previous paper. Type II is more distinct here than in Samoa, but less so than in the Marquesas. Here again Type II has not become uniformly distributed throughout the archipelago, but is concentrated more strongly in the northeastern groups of Vavau and Haapai and especially in Haano. These two types account for about 60 per cent of the population of Tonga. The remaining 40 per cent contained a large number of individuals with short heads, narrow faces and narrow noses. (See p. 209.)

Type I is the true Polynesian. Its relationship to the Aino is suggested. When Type II is removed the Polynesians are much more Caucasoid than they have hitherto been described in this series, but this approach to the Caucasian may be due to the fact that there is a third type in Polynesia carrying these traits. They seem to stand intermediate between the Caucasians and the Mongols in a totality of their characters. It is possible to regard the Polynesian as Mongoloid only on the assumption that the primitive Mongoloid type gave rise to the Caucasian types. In this sense the Polynesian may be regarded as a near-Caucasian type or as the result of one of nature's attempts to evolve a Caucasian type. They at least must have branched off very near to where the Caucasians branched off. (See pp. 215-7.)

Type II is called tentatively an Indonesian type. It is commonly looked upon as Mongoloid, but its negroid characters are emphasized. It is also pointed out that these two types are not very closely related and have very little in common except the fact that both may be somewhat hesitatingly classified as divergent Mongoloid types, the one in the Caucasian direction, and the other in the direction of the negro. Earlier theories of relationships of these two types are due in part to the unrecognized presence of an Indonesian type in Polynesia and a Polynesian type in Indonesia combined with an unfortunate confusion in anthropological terminology.

These two types do not entirely exhaust the possibility of other types in Polynesia. Among other things there is an extreme degree of brachycephaly, or short headedness, to be explained. It seems very probable that this condition is due to the presence of a third type, but discussion of this point is reserved for the Hawaiian paper of this series, since Hawaii is a stronghold of this element. Although the characteristics of this type in detail are not yet certain, there seems to be associated with them short heads, high, narrow faces, narrow noses, light skins and a well-developed beard and body hair. The isolation of this type will probably modify some of the characteristics given to the two types which form the subject of this paper.

INDIVIDUAL RECORDS

Individual records of the Marquesans, Samoans and Tongans on which the comparative studies of this paper are based are given in the accompanying tables. The Samoan and Tongan observations and measurements were made by E. W. Gifford and W. C. McKern; the Marquesan observations and measurements, by Dr. and Mrs. E. S. Handy; and the tables were compiled by Bessie P. Sullivan. The symbols used in the tables are as follows:

KEY TO TABLES OF INDIVIDUAL RECORDS

Explanation of Tables

A catalog number	6 bigonial diameter
B sex	7 anatomical face height
C age	8 nasal height
D island of birth	9 nasal width
E hair form	I cephalic index
F incisor rim, laterals	II transverse fronto-parietal index
G incisor rim, mesials	III transverse cephalo-facial index
1 stature	IV zygomatico-frontal index
2 head length	V zygomatico-mandibular index
3 head width	VI anatomical facial index
4 minimum frontal diameter	VII nasal index
5 face width, maximum	

Body of tables

Under B: m = male; f = female

Under D: Island of Birth

Samoa

1—Upolu

2—Savaii

3—Fiji

Tonga

1—Niuatoputapu

2—Niuafuou

3—Vavau

4—Haapai

5—Tongatabu

6—Eua

Marquesas

1—Nuku Hiva

2—Ua Huku

3—Ua Pou

4—Hiva Oa

5—Tahu Ata

6—Fatu Hiva

Under E: hair form

1—straight

2—low waves

3—deep waves

4—curly

5—frizzly

6—woolly

Under F and G: enamel rim on
incisor teeth

0—absent

1—slight

2—medium

3—marked

INDIVIDUAL RECORDS—MARQUESAN SERIES

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
14	m	46	1	1	...	...	163	182	150	108	143	105	120	55	40	824	720	953	755	734	839	727
29	m	48	1	1	...	...	168	190	156	104	142	110	121	50	41	821	667	910	732	775	852	820
2	m	21	1	4	3	3	...	187	169	101	140	...	114	45	41	856	631	875	721	...	814	978
28	m	20	1	3	3	3	173	187	153	107	146	103	110	46	45	818	699	936	733	706	753	978
62	m	43	1	1	0	0	162	180	155	100	145	103	117	50	47	861	645	936	690	710	807	940
116	m	45	1	1	0	0	163	181	153	100	140	107	119	48	43	845	654	915	714	764	850	896
111	m	60	1	1	...	...	161	196	156	93	153	116	117	56	49	796	596	981	608	758	765	875
109	m	48	1	1	...	...	169	210	152	103	155	118	130	55	46	724	678	1020	671	761	839	836
36	m	50	1	4	...	...	176	187	153	99	140	...	124	55	43	810	647	915	707	...	886	785
107	m	24	1	4	...	...	172	188	158	103	142	108	121	51	42	840	652	899	725	761	852	824
31	m	59	1	1	...	...	171	200	160	108	148	112	120	51	47	800	671	925	730	757	811	870
12	m	30	2	1	0	0	173	199	152	112	146	...	120	52	43	764	737	960	767	...	822	827
110	m	21	2	4	0	0	171	192	143	100	139	...	118	52	41	745	699	972	719	760	787	746
27	m	35	2	2	0	0	174	186	159	93	150	114	118	55	41	853	585	943	620	757	790	860
9	m	54	2	4	...	...	184	190	164	113	152	115	120	50	43	863	689	927	743	757	753	885
17	m	59	2	1	1	1	178	197	162	105	146	113	110	52	46	822	648	901	719	774	797	885
23	m	22	2	2	0	0	170	200	155	100	148	111	132	58	44	775	645	955	676	770	892	759
16	m	59	3	2	0	0	167	197	154	100	137	98	114	51	40	782	649	890	730	715	832	784
54	m	50	3	1	0	0	170	190	140	100	140	112	129	52	41	784	732	940	714	800	921	788
86	m	25	3	4	0	0	172	207	165	110	149	110	130	54	47	797	667	903	738	738	872	870
94	m	65	3	2	0	0	166	200	155	118	130	114	116	50	43	775	761	839	908	827	892	860
100	m	64	3	1	0	0	175	200	153	104	146	115	129	57	44	765	880	954	712	788	884	772
104	m	42	3	4	0	0	170	193	145	112	135	102	124	52	40	751	772	931	830	756	918	800
55	m	25	3	5	0	0	173	188	153	103	143	113	135	60	48	814	673	935	723	790	944	1071
89	m	20	3	2	0	0	167	192	153	102	143	111	103	42	45	797	667	935	713	776	720	808
68	m	25	3	4	0	0	178	195	154	111	146	111	118	49	46	790	721	948	760	760	808	939
45	m	29	3	1	0	0	174	197	158	112	147	105	115	53	47	802	709	930	762	714	782	887
45	m	29	3	1	0	0	175	194	160	106	149	105	126	49	43	825	662	931	711	705	846	878
57	m	30	3	2	0	0	166	190	155	100	143	106	111	47	38	816	664	968	687	760	740	808
66	m	31	3	5	0	0	166	202	155	100	143	106	118	48	41	767	645	923	699	741	825	854
40	m	41	3	1	1	1	176	203	154	100	146	111	...	58	45	759	649	948	685	760	...	776
98	m	33	3	1	1	1	174	197	148	105	145	110	130	53	45	802	665	918	724	759	849	907
88	m	32	3	4	...	...	169	192	156	110	140	116	127	58	46	812	705	897	781	829	907	793
78	m	60	3	1	...	...	176	197	159	102	140	108	133	57	...	807	642	880	729	771	950	...
58	m	60	3	2	...	...	204	157	104	157	110	...	...	59	46	770	662	1000	662	701	...	780
65	m	24	3	1	...	...	172	202	150	97	145	110	123	52	44	743	647	967	669	759	848	846
46	m	40	3	5	0	0	174	182	151	105	148	106	129	51	45	830	695	980	710	716	872	882
42	m	22	3	1	0	0	172	188	152	103	142	113	110	49	38	808	678	934	725	796	775	776
41	m	20	4	3	1	...	163	190	149	108	142	110	110	51	41	784	725	953	761	759	775	788
159	m	21	4	3	1	1	172	190	155	97	145	110	122	57	39	816	626	936	669	736	841	684
179	m	36	4	4	1	1	167	178	155	106	147	119	123	54	43	871	684	929	736	826	854	796
191	m	40	4	2	1	1	169	194	155	97	147	112	125	58	48	799	616	948	660	762	850	828
183	m	24	4	2	3	3	165	186	149	97	141	114	127	51	49	801	651	946	688	808	901	961
193	m	35	4	2	0	0	164	178	152	97	137	100	126	49	43	854	638	901	708	730	920	878
152	m	29	4	2	0	0	177	186	156	102	147	117	127	55	39	839	654	942	694	796	864	779
173	m	38	4	2	0	0	163	188	165	105	143	112	123	53	41	878	636	867	734	783	860	704

	A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
143	m	51	4	4	3	1	1	....	188	146	94	139	108	127	57	42	77.7	64.4	95.2	67.6	77.7	91.4	73.7
141	m	45	4	1	1	1	1	172	203	148	103	145	108	135	55	43	82.9	69.6	98.0	71.0	74.5	92.5	78.2
138	m	25	4	3	1	1	1	166	183	150	105	137	102	131	61	44	75.0	70.0	91.3	76.6	74.4	95.6	72.1
200	m	51	2	4	3	3	3	173	200	156	95	146	110	131	57	46	78.0	60.9	94.2	64.6	74.8	89.1	80.7
184	m	27	4	4	4	3	3	178	193	157	98	147	121	138	61	48	81.4	62.4	93.0	67.1	82.9	94.5	78.7
174	m	21	4	2	3	3	3	174	193	153	106	144	114	126	51	38	79.3	66.3	94.1	73.6	79.2	87.5	74.5
154	m	31	4	4	4	3	3	....	203	154	103	144	109	128	51	40	75.9	66.9	93.5	71.5	75.7	88.9	78.4
176	m	41	4	1	3	3	3	176	196	152	99	145	110	126	52	43	77.6	65.1	95.4	68.3	75.9	86.9	82.7
193	m	60	4	4	3	3	3	168	188	153	102	144	113	131	57	42	81.4	66.7	94.1	70.8	78.5	91.0	73.7
198	m	34	4	1	3	3	3	168	195	155	98	140	108	134	59	39	79.5	63.2	90.3	70.0	77.1	95.7	66.1
201	m	30	4	4	2	0	0	179	200	153	105	145	115	133	62	39	76.5	68.6	94.8	72.4	79.3	91.7	62.9
129	m	35	4	2	0	0	0	162	185	143	96	135	104	121	58	44	77.3	67.1	94.4	71.1	77.0	89.6	75.9
186	m	60	4	....	2	....	....	....	199	144	100	147	107	134	57	43	72.4	69.4	102.1	68.0	72.8	91.2	75.4
168	m	25	4	4	2	0	0	173	205	162	105	144	110	139	58	43	79.0	64.8	88.9	72.9	76.4	96.5	74.1
166	m	28	4	4	2	0	0	180	188	154	98	140	105	129	57	41	81.9	63.6	90.9	70.0	75.0	92.1	71.9
134	m	64	4	2	0	0	0	171	207	152	102	145	110	131	53	41	80.8	67.9	94.1	72.0	76.9	91.6	77.4
194	m	51	4	1	....	....	....	....	170	195	105	147	115	130	54	44	73.4	67.5	95.4	70.3	79.3	96.6	81.8
137	m	46	4	4	4	0	0	169	198	148	102	140	112	126	54	42	78.7	68.9	94.6	72.9	80.0	90.0	77.8
177	m	40	4	3	0	0	0	166	194	148	100	137	102	122	53	43	76.3	67.6	92.0	73.0	74.4	89.0	81.1
170	m	34	4	2	0	0	0	168	195	145	104	106	106	122	56	45	74.4	71.7	96.6	74.3	75.7	87.1	80.4
189	m	40	4	1	0	0	0	165	195	151	100	147	100	117	50	43	77.4	66.2	97.4	68.0	68.0	79.6	86.0
199	m	20	4	4	1	1	1	169	182	148	97	138	111	126	51	43	81.3	65.5	93.2	70.3	80.4	91.3	84.3
147	m	ad	4	4	4	....	....	....	170	201	152	103	145	123	50	43	75.6	67.8	95.4	71.0	79.3	84.8	86.0
169	m	23	4	4	4	0	0	166	185	156	101	141	112	130	53	40	84.3	64.7	90.4	71.6	79.4	92.2	73.5
77	m	26	4	2	0	0	0	178	189	153	104	133	108	....	....	....	81.0	68.0	86.9	78.2	81.2	....	78.4
11	m	24	6	1	1	1	1	175	195	155	100	143	110	127	54	45	79.5	64.5	92.3	69.9	76.9	88.8	83.0
123	m	40	6	1	1	1	1	163	201	154	110	150	105	120	54	41	76.6	71.3	97.4	73.3	70.0	80.3	75.9
120	m	33	6	2	1	1	1	168	198	153	106	142	107	124	48	48	77.3	69.3	92.8	74.6	75.4	87.3	100.0
165	m	36	6	4	1	1	1	167	198	160	110	149	117	134	49	42	80.8	68.8	93.1	73.8	78.5	89.3	85.7
164	m	20	6	4	1	1	1	167	191	147	104	137	107	123	40	47	77.0	70.8	93.2	75.9	78.1	90.5	95.9
125	m	37	6	1	1	1	1	164	188	154	98	127	....	....	....	....	81.9	63.6	89.0	71.5	....	83.4	84.0
122	m	22	6	2	0	0	0	175	201	153	107	140	95	132	47	45	76.1	65.9	91.5	66.4	67.9	94.3	95.7
156	m	60	6	1	0	0	0	174	190	149	98	143	110	122	57	46	78.4	63.8	96.0	68.5	76.9	84.1	80.7
146	m	59	6	2	1	0	0	162	193	143	97	138	106	124	54	41	74.1	67.8	93.0	72.0	79.7	93.2	75.9
121	m	23	6	2	3	3	3	169	189	148	101	138	94	129	55	41	78.3	68.2	93.2	73.2	68.1	93.5	74.6
118	m	27	6	4	0	0	0	169	193	147	112	141	113	125	47	42	76.2	76.2	95.9	79.4	80.1	88.6	89.4
119	m	53	6	2	0	0	0	161	187	144	114	138	107	120	48	42	77.0	79.2	95.8	82.6	77.5	87.0	87.5
13	f	19	1	3	0	0	0	157	180	153	95	133	102	114	47	35	83.0	62.1	86.9	71.4	76.7	85.7	74.5
117	f	60	1	4	....	....	....	....	166	182	146	102	142	114	50	44	80.2	69.9	97.3	71.8	80.3	87.2	88.0
110	f	25	1	4	0	0	0	159	189	150	103	137	103	116	50	38	79.4	68.7	91.3	75.2	75.2	84.7	76.0
3	f	27	1	4	0	0	0	161	185	159	100	140	....	....	....	....	86.0	62.9	88.0	71.4	....	82.9	85.7
112	f	21	1	1	1	....	....	....	155	185	133	93	130	93	110	44	80.2	60.8	85.0	71.5	71.5	84.6	90.9
155	f	27	1	2	0	0	3	154	174	149	100	133	91	110	48	40	85.6	67.1	89.3	75.2	68.4	82.7	83.3
108	f	50	1	2	....	....	....	....	151	177	149	100	136	104	48	38	84.2	67.1	91.3	73.5	73.5	79.2	79.2
15	f	59	2	2	....	....	....	....	160	190	100	137	102	121	54	43	79.0	66.7	91.3	72.0	74.4	88.3	79.6

INDIVIDUAL RECORDS—MARQUESAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
21	f	24	2	6	0	0	161	170	150	100	134	102	92	44	38	88.2	66.7	89.3	74.6	76.1	68.7	86.4
6	f	18	2	2	0	0	138	175	153	100	137	.....	106	47	40	87.4	65.4	89.5	73.0	.....	77.4	85.1
30	f	17	2	1	0	3	156	176	153	103	129	.....	103	42	36	86.9	67.3	88.3	72.8	75.7	81.4	85.7
4	f	27	2	4	0	0	160	178	153	99	136	103	109	49	42	86.0	64.7	88.9	72.8	78.9	80.2	85.7
26	f	48	2	1	0	1	163	195	150	97	142	112	117	50	45	76.9	64.7	94.7	68.3	75.4	75.4	90.0
32	f	26	2	4	1	0	136	174	145	95	133	100	103	48	38	83.3	65.5	91.7	71.4	77.4	77.4	87.5
1	f	23	2	1	0	0	160	180	154	104	.....	103	129	48	42	85.6	67.5	.....	.....	.....	.....	87.5
19	f	32	2	2	.....	.....	164	177	157	106	144	115	114	52	39	88.7	67.5	91.7	73.6	79.3	79.2	87.5
33	f	25	2	4	0	0	166	180	151	103	134	101	117	48	45	83.9	68.2	88.7	76.9	75.4	87.3	93.8
80	f	20	3	3	0	0	157	180	155	124	136	112	118	52	40	88.1	80.0	88.7	91.2	82.4	86.8	96.9
102	f	60	3	4	0	0	165	195	144	100	138	104	112	51	46	73.8	69.4	95.8	72.5	75.4	81.2	90.2
87	f	ad	3	2	0	0	166	188	157	124	149	110	124	53	41	83.5	79.0	94.9	83.2	73.8	83.2	77.4
48	f	23	3	1	1	1	167	183	149	100	134	102	117	50	40	81.4	67.1	89.9	74.6	76.1	87.3	80.0
49	f	24	3	1	0	.....	167	190	147	105	141	92	133	55	50	81.0	68.2	91.6	74.5	65.2	94.3	95.4
59	f	60	3	2	0	0	170	196	154	105	139	108	122	41	40	80.5	67.8	93.3	72.7	77.7	87.7	97.6
63	f	ad	3	4	0	0	169	185	149	101	139	108	122	41	40	82.5	66.0	88.5	74.6	72.5	87.7	78.4
64	f	23	3	1	0	0	165	189	156	103	138	100	121	51	40	87.1	78.6	89.7	87.7	75.4	87.7	84.0
81	f	50	3	1	.....	.....	163	188	145	114	130	98	114	50	42	77.1	78.6	89.7	70.4	76.3	77.8	93.0
92	f	38	3	3	1	0	137	170	150	95	135	103	105	43	40	88.2	63.3	90.0	70.4	75.4	88.0	91.3
37	f	30	3	1	0	0	147	174	153	95	133	100	117	46	42	87.2	63.3	86.9	71.4	75.2	87.8	91.3
68	f	32	3	5	.....	.....	161	172	150	95	142	102	107	39	39	86.9	66.7	90.2	66.9	71.8	77.5	95.1
44	f	18	3	3	0	0	158	176	153	102	132	103	107	41	38	81.3	61.5	93.2	73.9	74.6	79.7	88.4
51	f	26	3	2	0	0	162	182	148	91	138	101	110	43	44	82.4	66.7	92.7	71.9	76.3	79.1	95.6
71	f	35	3	3	.....	.....	162	182	150	100	139	106	110	46	44	80.6	67.3	88.0	76.5	75.0	78.8	85.7
99	f	26	3	5	0	0	154	186	150	101	132	99	104	42	36	80.2	67.3	88.0	71.1	74.6	77.2	102.4
38	f	9	3	2	1	.....	166	192	156	101	142	106	110	45	42	83.5	63.2	89.5	70.9	74.5	71.6	100.0
39	f	25	3	3	0	0	164	182	152	96	136	108	105	41	41	80.3	68.0	95.9	70.9	74.5	71.6	100.0
50	f	27	3	4	0	0	156	183	147	100	141	105	101	41	43	83.1	67.1	92.8	72.3	75.9	82.3	93.5
61	f	35	3	2	.....	.....	165	183	152	192	141	107	116	46	43	81.6	72.8	84.1	86.6	76.4	91.3	84.8
95	f	40	3	1	0	0	160	185	151	110	127	97	116	46	39	81.6	69.1	90.1	76.6	75.2	89.8	80.8
67	f	ad	3	1	0	0	165	183	152	105	137	103	123	59	42	91.3	79.6	91.7	86.8	78.5	80.6	97.6
97	f	30	3	2	0	0	160	172	157	125	144	113	116	52	41	77.3	65.6	85.0	77.2	79.4	80.9	88.2
75	f	25	3	2	0	0	163	207	160	105	136	108	110	42	41	81.8	73.9	88.2	83.7	77.8	83.7	88.2
91	f	60	3	4	.....	.....	169	187	153	113	135	105	113	51	45	82.1	69.4	93.9	73.9	77.5	82.6	82.2
47	f	40	3	5	0	0	160	179	147	102	138	107	114	45	37	84.8	65.6	91.4	71.7	79.7	87.7	79.2
136	f	45	4	2	0	0	160	178	151	99	138	110	121	48	38	84.8	65.6	88.4	73.6	76.7	78.9	73.6
133	f	40	4	2	0	1	161	180	151	99	138	110	101	53	39	81.1	65.1	88.4	73.6	76.7	86.4	78.4
7	f	65	4	1	.....	.....	156	185	148	96	132	.....	114	46	40	80.0	64.9	88.6	72.7	.....	86.4	87.0
149	f	39	4	1	0	0	164	182	144	112	132	95	114	51	40	80.0	64.9	88.6	72.7	.....	86.4	87.0
161	f	26	4	2	0	0	166	188	157	103	138	105	121	54	38	83.5	65.6	87.9	74.6	76.1	82.9	80.4
140	f	35	4	2	0	0	156	185	148	102	140	105	116	56	45	80.0	65.6	88.9	72.9	75.0	82.9	80.4
139	f	27	4	4	0	0	185	187	146	98	134	107	116	52	39	78.1	67.1	91.8	73.1	79.8	86.6	75.0
160	f	70	4	4	0	0	168	191	147	113	138	110	117	51	40	77.0	76.9	93.9	81.9	79.7	84.8	78.4
142	f	50	4	2	0	0	138	190	152	100	130	105	127	50	39	80.0	65.8	88.5	76.9	80.8	97.7	78.0
188	f	21	4	5	1	1	138	177	144	96	128	94	125	53	42	81.4	66.7	88.9	75.0	73.4	97.7	75.5
178	f	35	4	3	0	0	160	183	145	93	133	103	124	53	40	79.2	64.1	91.1	69.9	77.4	93.2	75.5

INDIVIDUAL RECORDS—MARQUESAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
82	f	21	4	3	0	3	150	186	140	100	127	96	118	48	39	753	714	907	787	756	929	812
45	f	28	4	1	0	0	166	187	148	102	130	100	125	51	38	791	689	919	750	735	919	706
87	f	70	4	2	...	...	155	186	146	100	129	100	118	58	38	785	685	884	775	775	915	655
92	f	35	4	4	...	...	164	187	150	100	134	111	118	53	40	802	667	893	746	828	881	755
72	f	48	4	2	3	3	160	194	149	101	137	105	129	53	41	768	678	920	737	766	942	774
22	f	32	4	1	0	0	159	180	155	102	132	106	108	44	42	861	658	852	737	803	818	954
35	f	18	4	2	0	0	165	171	147	95	135	103	104	46	41	860	646	918	704	763	770	891
35	f	40	4	1	...	...	161	186	151	104	143	109	116	43	42	812	689	947	727	762	811	977
85	f	40	4	2	0	0	152	183	150	106	140	103	115	43	40	820	707	933	757	736	821	930
71	f	20	4	2	...	...	169	186	146	100	135	93	111	52	36	785	685	925	741	689	822	892
27	f	20	4	2	...	...	174	192	152	104	137	106	117	51	40	792	684	901	759	774	854	784
80	f	30	4	2	...	...	159	183	139	99	130	99	118	51	46	760	712	935	702	762	900	932
18	f	18	4	1	1	1	158	190	152	92	130	90	117	46	38	800	605	855	708	692	900	826
67	f	34	4	2	0	0	159	181	147	110	136	99	112	47	41	812	748	925	809	728	824	872
82	f	30	4	4	0	0	157	180	150	121	136	113	112	50	40	833	807	907	809	831	824	800
40	f	26	5	2	...	...	153	175	153	100	130	103	115	51	38	874	654	850	769	792	885	704
58	f	30	5	5	...	...	162	181	151	100	130	102	120	53	32	834	662	861	753	785	923	645
40	f	25	5	4	...	...	163	186	152	101	133	100	122	56	40	817	664	875	752	792	917	714
26	f	20	6	3	1	1	157	181	146	98	132	92	116	50	38	807	671	898	742	697	879	760
26	f	60	6	1	3	0	152	177	148	98	133	105	123	57	42	836	662	899	737	790	925	737

INDIVIDUAL RECORDS—SAMOAN SERIES

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
29	m	50	1	1	0	1	162	188	158	108	148	96	133	60	50	840	68.4	93.7	72.9	64.9	89.9	83.3
15	m	50	1	1	1	0	167	189	160	104	151	123	139	62	45	84.7	65.0	94.4	68.9	81.5	85.4	72.6
22	m	24	1	2	1	0	168	194	161	106	150	101	136	62	46	82.9	65.8	93.2	70.7	67.3	90.7	74.6
59	m	40	1	1	0	1	173	197	151	95	133	106	136	64	44	76.6	62.9	94.7	66.4	79.1	95.1	68.8
31	m	41	1	1	1	0	177	182	158	95	139	96	145	68	43	86.8	60.1	87.9	68.4	69.1	104.3	63.2
31	m	34	1	1	1	0	173	193	161	114	156	112	123	61	47	83.4	70.8	96.9	73.1	71.8	78.8	77.0
17	m	20	1	2	1	0	175	195	155	110	115	135	137	58	41	79.5	70.9	97.2	72.8	76.2	89.4	79.0
45	m	29	1	1	1	0	175	189	156	101	152	98	137	57	46	82.8	72.1	98.0	73.5	64.5	94.0	70.7
54	m	60	1	1	0	0	169	186	154	111	151	94	142	63	43	85.1	63.8	98.7	64.6	64.6	87.9	68.2
34	m	39	1	1	0	0	175	188	160	102	158	102	132	63	48	78.3	67.8	98.7	63.2	63.2	94.0	80.7
34	m	33	1	1	0	0	182	203	159	111	157	107	138	68	41	78.0	67.8	98.7	70.7	68.2	83.5	68.2
67	m	23	1	2	0	0	179	191	149	101	141	101	123	51	48	81.9	63.3	92.4	70.1	70.1	85.4	80.4
69	m	65	1	1	0	0	169	193	158	100	146	109	133	58	43	83.9	62.8	92.4	68.5	74.7	91.1	74.1
69	m	28	1	1	0	0	169	177	157	90	144	97	129	61	41	88.7	57.3	91.7	62.5	67.4	89.9	73.8
5	m	45	1	1	1	0	171	190	159	102	146	110	131	61	45	83.7	64.6	91.8	69.9	75.3	86.7	73.8
61	m	25	1	1	0	0	172	181	158	91	148	110	125	61	45	87.3	57.6	91.8	62.8	75.9	89.2	75.0
65	m	29	1	2	0	0	178	186	161	104	148	117	130	60	45	86.6	64.4	91.8	70.3	79.0	87.8	75.0
65	m	29	1	1	0	0	165	190	155	102	140	110	115	55	39	81.6	64.8	90.3	70.9	78.6	82.1	70.9

INDIVIDUAL RECORDS—SAMOAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
49	m	28	1	1	...	...	171	205	156	107	142	107	136	61	42	76.1	68.6	91.0	75.4	75.4	95.8	68.8
26	m	35	1	1	...	...	169	191	157	106	148	106	140	66	44	82.2	67.5	94.3	71.6	71.6	94.6	68.8
16	m	42	1	1	...	...	162	183	160	94	138	101	129	58	45	87.4	58.8	86.2	68.1	73.2	93.5	77.6
2	m	43	1	1	0	0	180	189	162	118	156	114	137	62	46	85.7	72.8	96.3	75.6	73.1	87.8	74.2
1	m	32	1	1	0	0	169	189	153	107	147	105	124	55	43	80.9	69.9	96.1	72.8	71.4	84.4	78.2
35	m	29	1	1	0	0	176	194	150	110	141	108	132	59	46	77.3	73.3	94.0	78.0	76.6	93.6	77.9
67	m	28	1	1	1	0	175	196	159	107	148	105	133	59	47	81.1	67.3	93.1	72.3	70.9	89.9	79.7
27	m	28	1	2	1	0	174	201	155	107	147	108	132	61	49	77.1	69.0	94.8	72.8	73.5	89.8	80.3
60	m	22	1	2	0	0	171	196	152	106	144	107	135	58	49	77.6	69.7	94.7	73.6	74.3	93.8	84.5
6	m	30	1	2	0	0	184	199	150	100	140	99	123	59	40	75.4	66.7	93.3	71.4	70.7	87.9	67.8
19	m	23	1	2	0	0	176	193	150	111	141	98	136	61	44	77.7	74.0	94.0	78.8	69.5	96.4	72.1
36	m	30	1	2	0	0	185	154	99	143	104	125	124	60	42	83.2	64.3	92.9	69.2	72.7	87.4	70.0
14	m	35	1	2	0	0	192	154	104	147	102	124	124	60	45	80.2	67.5	95.4	70.8	69.4	84.4	75.0
42	m	28	1	2	0	0	185	148	101	137	98	122	122	60	43	80.0	68.2	92.6	73.7	71.5	89.0	71.7
46	m	31	1	2	0	0	177	198	154	93	145	103	135	61	43	77.8	60.4	94.2	64.1	71.0	93.1	70.5
9	m	37	1	1	0	0	172	186	150	96	144	100	126	60	44	80.6	64.0	96.0	66.7	69.4	87.5	73.3
50	m	29	1	1	3	3	167	174	155	104	141	109	131	59	40	89.1	67.1	90.9	73.8	77.3	92.9	67.8
10	m	52	1	1	0	3	176	195	168	108	148	101	142	66	43	85.1	63.1	89.2	72.9	68.2	95.9	65.2
37	m	21	1	2	3	1	173	184	157	99	146	106	127	65	45	85.3	65.1	92.9	67.8	72.6	86.9	69.2
47	m	27	1	1	3	1	174	196	147	102	138	99	141	60	43	75.0	69.4	93.9	73.9	71.7	102.2	71.7
55	m	28	1	2	3	3	175	192	157	100	148	108	125	59	43	81.8	63.7	94.3	67.6	72.9	84.5	72.9
8	m	37	1	1	1	1	167	195	155	111	151	106	143	58	46	79.5	71.6	97.4	73.5	70.2	94.7	79.3
24	m	23	1	3	1	1	174	198	155	113	150	106	135	65	43	78.3	72.9	96.8	75.3	70.7	90.0	66.2
13	m	38	1	1	1	1	164	187	156	103	138	100	129	58	38	83.4	66.0	88.5	74.6	72.5	93.5	65.5
64	m	26	1	1	1	1	166	185	157	108	146	104	136	60	44	84.9	68.8	92.9	73.9	71.2	93.2	73.3
56	m	30	1	2	1	1	193	183	156	100	145	103	134	58	44	80.8	64.1	92.9	68.9	71.0	92.4	75.9
48	m	28	1	1	1	1	173	198	153	102	147	112	126	59	44	77.3	66.7	96.1	69.4	76.2	85.7	74.6
63	m	27	1	1	0	1	172	194	157	106	154	105	124	58	42	80.9	67.5	98.1	68.8	68.2	80.5	72.4
43	m	28	1	1	0	0	176	193	158	109	153	120	131	54	48	81.9	68.9	96.8	71.2	78.4	85.6	88.9
62	m	34	1	3	0	0	170	196	153	106	153	106	133	56	46	78.1	69.3	100.0	69.3	69.3	86.9	82.1
23	m	30	1	1	0	0	180	191	165	114	156	112	131	62	48	86.4	69.1	94.6	73.1	71.8	83.9	77.4
68	m	26	1	3	3	3	166	185	148	110	151	100	136	60	43	80.0	74.3	102.0	72.8	66.2	93.1	71.7
38	m	29	1	3	3	3	167	193	148	97	136	92	134	65	42	76.7	65.5	91.9	71.3	67.6	98.5	64.6
28	m	30	1	3	1	1	169	190	153	103	145	98	133	61	41	80.5	67.3	94.8	71.0	67.6	91.7	67.2
25	m	30	1	4	0	0	166	196	146	101	143	98	141	64	42	74.5	69.2	97.9	70.6	68.5	98.6	65.6
11	m	27	1	4	...	...	195	157	107	133	...	...	140	63	45	80.5	68.2	97.4	69.9	...	91.5	71.4
53	m	33	1	4	0	...	178	189	153	106	141	106	134	61	44	80.9	69.3	92.2	75.2	75.2	95.0	72.1
40	m	24	1	4	3	1	182	192	143	108	138	100	135	57	40	74.5	75.5	96.5	78.3	72.5	97.8	70.2
52	m	32	2	1	1	0	176	185	155	98	145	106	126	58	42	83.8	63.2	93.6	67.6	73.1	86.9	72.4
20	m	36	2	1	1	0	165	194	157	105	150	110	130	60	43	80.9	66.9	95.5	70.0	73.3	86.7	71.7
33	m	23	2	1	1	0	166	186	149	100	140	99	118	52	42	80.1	67.1	93.9	71.4	70.7	84.3	80.8
58	m	37	2	1	1	0	178	191	156	107	144	...	143	69	42	81.7	68.6	92.3	74.3	...	99.3	60.9
32	m	31	2	2	0	0	166	187	153	105	145	99	126	57	40	81.8	68.6	94.8	72.4	68.3	86.9	70.2
57	m	29	2	2	0	0	172	193	154	101	145	105	126	56	43	79.8	65.6	94.2	69.7	72.4	86.9	76.8
18	m	40	2	1	0	0	174	190	146	92	139	109	127	59	44	76.8	63.0	95.2	66.2	78.4	86.7	74.6
4	m	28	2	1	3	0	165	183	157	107	143	103	124	55	41	85.8	68.2	91.1	74.8	72.0	91.4	80.0

INDIVIDUAL RECORDS—SAMOAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
12	m	24	2	1	3	1	172	190	152	99	142	103	122	60	42	80.0	65.1	93.4	69.7	72.5	85.9	70.0
39	m	21	2	2	1	1	166	188	151	93	138	100	120	53	45	80.3	61.6	91.4	67.4	72.5	86.9	84.9
41	m	26	2	2	1	1	173	187	153	92	143	107	121	52	47	81.8	60.1	93.5	64.3	74.8	84.6	90.4
30	m	32	2	3	0	0	176	184	155	105	144	96	128	57	41	84.2	67.7	92.9	72.9	66.7	88.9	71.9
21	m	25	3	4	.....	.....	171	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
91	f	35	1	2	3	3	162	182	150	97	138	94	116	53	40	82.4	64.7	92.0	70.3	68.1	84.1	75.5
90	f	20	1	2	0	0	156	173	141	105	132	89	115	55	40	81.5	74.5	93.6	79.6	67.4	87.1	72.7
89	f	18	1	1	0	0	160	183	140	97	133	104	116	53	40	76.5	69.3	95.0	72.9	78.2	87.2	75.5
88	f	23	1	1	0	0	160	178	147	104	132	100	126	59	40	82.6	70.8	90.5	78.2	75.2	94.7	67.8
87	f	18	1	2	1	0	155	181	154	102	138	105	122	62	42	85.1	66.2	89.6	73.9	76.1	88.4	67.7
84	f	22	1	1	1	0	161	178	149	99	131	100	124	53	38	83.7	66.4	87.9	75.6	76.3	94.7	71.7
82	f	20	1	1	0	0	166	179	150	104	139	95	118	53	41	83.8	69.3	92.7	74.8	68.4	84.9	77.4
81	f	48	1	1	0	0	159	182	151	95	134	96	129	54	42	82.9	62.9	88.7	70.9	71.6	96.3	77.8
77	f	24	1	2	3	0	158	182	147	100	136	103	110	45	46	80.8	68.0	92.5	73.5	85.7	80.9	102.2
76	f	22	1	2	0	0	166	186	146	106	133	97	116	48	40	78.5	72.6	91.1	79.7	72.9	87.2	83.3
75	f	19	1	1	1	0	162	184	153	102	136	97	119	50	40	83.2	66.7	88.9	75.0	71.3	87.5	80.0
74	f	32	1	1	0	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
71	f	35	1	1	0	0	158	182	147	100	136	102	135	62	41	80.8	68.0	92.5	73.5	75.0	93.3	66.1
70	f	24	1	2	0	0	163	188	146	98	140	105	122	49	44	77.7	67.1	95.9	70.0	75.0	87.1	89.8
86	f	18	1	3	0	0	162	186	143	101	132	101	125	56	45	76.9	70.6	92.3	76.5	76.5	94.7	80.4
85	f	25	1	3	0	0	160	181	144	97	137	100	118	56	41	81.2	72.8	93.2	78.1	72.9	86.1	73.2
88	f	36	2	2	1	0	156	184	144	95	138	92	120	54	40	78.3	65.9	93.8	68.8	66.7	86.9	74.1
85	f	20	2	2	1	1	157	178	147	96	136	102	111	50	34	82.6	65.3	92.5	70.6	75.0	81.6	68.0
80	f	25	2	2	1	1	170	195	149	107	145	99	133	55	45	76.4	71.8	97.3	73.8	68.3	91.7	81.8
79	f	35	2	2	1	3	155	183	157	104	143	99	120	51	40	85.8	66.2	91.1	72.7	69.2	83.9	78.4
72	f	31	2	1	3	1	162	182	146	108	132	100	128	61	40	76.0	73.9	90.4	71.8	75.8	96.9	65.6
73	f	35	2	5	0	0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
																77.7	71.9	97.9	73.4	67.8	84.6	70.0

INDIVIDUAL RECORDS—TONGAN SERIES

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
88	m	48	3	1	0	0	170	190	145	119	149	111	122	56	46	76.3	82.1	102.8	79.9	74.5	81.9	82.1
42	m	24	3	2	0	0	179	193	154	104	142	100	131	56	39	79.8	67.5	92.2	73.2	70.4	92.2	69.6
28	m	22	3	1	1	0	165	186	156	103	142	107	131	59	45	83.9	66.0	91.0	72.5	75.4	92.2	76.3
71	m	21	3	2	0	0	175	189	154	105	141	106	125	55	45	81.5	68.2	91.6	74.5	75.2	88.6	81.8
72	m	19	3	2	1	1	176	200	153	105	139	94	128	60	42	76.5	68.6	90.8	75.5	76.5	92.1	70.0
9	m	40	3	2	1	1	177	197	156	109	143	116	129	57	49	79.2	69.9	91.7	76.2	81.1	90.2	85.9
47	m	43	3	2	1	1	176	205	160	107	150	111	134	55	49	78.0	66.9	93.8	71.3	74.0	89.3	89.1
115	m	21	3	2	1	3	0	169	188	150	102	104	125	53	49	79.8	68.0	93.3	72.9	74.3	89.3	89.1
20	m	20	2	1	3	3	1	161	188	153	104	141	98	120	52	42	81.4	67.9	92.2	73.8	69.5	85.1
110	m	22	3	3	3	3	1	174	182	162	104	141	108	127	53	44	79.9	70.4	91.8	76.7	86.9	83.0
31	m	20	3	3	0	0	172	191	151	103	147	100	128	57	47	89.0	64.2	87.0	73.8	76.6	90.8	82.5

INDIVIDUAL RECORDS—TONGAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
5	m	46	4	1	...	...	172	191	151	103	147	100	126	59	47	79.1	68.2	97.4	70.1	68.0	85.7	79.7
85	m	28	4	2	...	...	176	194	157	106	152	110	134	61	47	80.9	67.5	96.8	69.7	72.4	88.2	77.0
13	m	20	4	1	0	0	175	196	155	105	150	104	117	48	47	79.1	67.7	96.8	70.0	69.3	78.0	97.9
14	m	36	4	1	0	0	173	184	156	102	144	110	135	64	45	84.8	65.4	92.3	70.8	76.4	93.8	70.3
69	m	20	4	2	0	0	167	195	156	103	144	103	128	53	42	80.0	66.0	92.3	71.6	71.5	88.9	81.1
19	m	20	4	2	0	0	170	189	148	104	135	96	118	52	43	80.0	66.0	92.3	71.6	71.5	88.9	81.1
95	m	24	4	1	0	0	181	204	155	109	146	104	131	55	40	75.9	70.3	91.2	71.1	71.1	87.4	80.8
10	m	25	4	2	0	0	178	191	155	112	142	111	119	55	48	81.2	72.3	91.6	78.9	78.2	89.7	90.9
113	m	22	4	2	0	1	173	195	155	106	139	102	142	57	43	79.5	68.4	89.7	76.3	73.4	102.2	87.3
114	m	22	4	2	0	1	177	176	157	104	139	107	115	56	45	89.2	66.2	88.5	74.8	76.9	82.7	75.4
40	m	20	4	2	1	0	169	187	153	103	148	102	129	58	44	81.8	67.3	96.7	69.6	68.9	87.2	75.9
25	m	24	4	2	1	0	187	182	152	100	140	111	119	56	47	83.5	65.8	92.1	71.4	79.3	83.0	83.9
35	m	20	4	2	1	0	177	199	156	113	147	99	133	60	49	78.4	72.4	94.2	76.9	67.4	90.5	81.7
94	m	24	4	2	1	0	181	202	167	113	147	99	133	60	49	78.4	72.4	94.2	76.9	67.4	90.5	81.7
44	m	19	4	1	1	1	167	198	155	107	142	103	135	56	46	82.7	69.0	91.6	75.4	72.5	95.1	87.5
48	m	19	4	1	1	1	176	188	152	110	140	102	122	55	38	80.8	66.4	92.1	78.6	72.9	87.1	71.7
8	m	30	4	1	1	1	172	186	154	110	153	105	120	58	49	82.2	67.4	90.9	71.9	68.6	78.4	84.5
91	m	48	4	1	1	1	183	210	136	116	159	114	140	60	50	74.3	74.3	101.9	72.9	71.7	88.0	83.3
51	m	20	4	1	1	3	174	198	150	104	136	102	132	56	47	75.8	69.3	90.7	76.5	75.0	97.1	83.9
86	m	28	4	1	3	3	173	187	153	106	143	99	120	54	44	81.8	69.3	93.5	74.1	69.2	83.9	81.5
39	m	27	4	2	1	3	177	189	159	104	157	116	140	62	45	84.1	65.4	98.7	66.2	73.9	89.2	72.6
29	m	20	4	4	3	1	165	182	156	111	133	115	119	52	48	85.7	71.2	85.3	83.5	86.5	89.5	92.3
92	m	31	4	3	1	0	170	193	148	101	145	92	135	57	44	76.7	68.2	97.9	69.7	63.4	93.1	77.2
112	m	21	4	3	0	0	182	192	152	96	131	111	134	64	47	79.2	63.2	86.2	73.3	84.7	102.3	73.4
84	m	25	5	1	0	0	177	196	155	100	140	100	131	60	46	79.1	64.5	90.3	71.4	71.4	93.6	76.7
46	m	18	5	2	0	0	174	182	150	108	135	94	121	54	42	82.4	72.0	90.0	80.0	69.6	89.6	77.8
74	m	26	5	2	0	0	160	186	154	102	138	101	120	55	44	82.8	66.2	89.6	73.9	73.2	86.0	80.0
59	m	23	5	2	0	0	172	194	155	109	155	110	124	53	48	79.9	70.3	100.0	70.3	70.9	80.0	90.6
107	m	36	5	2	0	0	188	201	162	104	158	109	133	61	48	80.6	64.2	97.5	65.8	68.9	84.2	78.7
106	m	30	5	2	0	0	179	190	156	111	152	109	128	56	44	82.1	71.2	97.4	73.0	71.7	84.2	78.6
27	m	23	5	2	0	0	177	187	152	105	147	104	143	62	47	83.8	69.1	96.7	71.4	70.8	97.3	83.8
66	m	47	5	2	0	0	175	198	156	101	145	112	136	58	41	78.8	64.7	92.9	69.7	77.2	93.8	70.7
22	m	19	5	2	0	0	173	192	151	105	142	109	134	62	43	78.6	69.5	94.0	73.9	76.8	94.4	69.4
102	m	34	5	2	0	0	167	191	160	106	146	106	125	59	39	83.8	66.2	91.2	72.6	72.6	85.6	66.1
96	m	24	5	2	0	0	167	186	154	102	145	112	134	62	40	82.8	66.2	94.2	70.3	77.2	92.4	64.5
108	m	36	5	1	1	...	165	193	160	95	151	98	130	61	44	82.9	59.4	94.4	62.9	64.9	86.1	72.1
101	m	22	5	1	...	...	170	191	155	108	146	118	134	61	45	81.2	69.7	94.2	73.9	80.8	91.8	73.8
37	m	28	5	2	0	0	180	197	153	108	147	101	130	56	42	77.7	66.5	96.1	73.5	68.7	88.4	75.0
99	m	54	5	2	0	0	179	204	158	105	150	101	130	59	45	77.4	66.5	94.9	70.0	67.3	86.7	76.3
89	m	42	5	1	0	0	177	194	157	103	147	111	132	57	45	80.9	65.6	93.6	70.1	75.6	89.8	78.9
97	m	42	5	1	0	0	172	193	159	97	153	109	133	59	47	82.4	61.0	96.2	63.4	71.2	86.9	79.7
109	m	27	5	1	0	0	174	181	153	100	139	110	127	65	46	84.5	65.4	90.8	71.9	79.1	91.4	70.8
81	m	56	5	1	0	0	190	167	102	151	104	145	145	69	42	87.9	61.1	90.4	67.6	68.9	96.0	60.9
100	m	20	5	2	1	0	170	186	161	106	145	108	132	60	39	86.6	65.8	90.1	73.1	74.5	91.0	65.0
75	m	21	5	2	1	0	176	199	158	105	139	101	125	58	45	79.4	66.5	97.5	75.7	72.7	89.9	77.6
68	m	37	5	1	1	0	178	189	154	100	149	102	129	61	46	81.5	64.9	96.7	67.1	68.5	86.6	75.4

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	II	III	IV	V	VI	VII
1	m	37	5	1	0	1	170	184	148	99	139	112	125	55	39	804	669	939	712	806	899	709
18	m	26	5	1	1	0	176	204	154	107	143	105	137	64	44	763	695	929	748	712	958	688
6	m	26	5	2	1	0	178	182	157	115	149	115	136	63	43	853	732	949	772	772	913	688
119	m	21	5	1	1	0	172	192	163	106	149	96	130	64	42	849	644	914	705	844	872	656
118	m	23	5	2	1	0	164	195	154	105	146	106	130	65	41	789	682	948	719	726	890	631
43	m	18	5	1	1	0	167	190	152	102	138	101	124	52	55	800	671	908	739	732	899	1058
45	m	22	5	2	1	0	181	199	156	111	140	100	131	57	45	784	712	897	793	714	936	789
30	m	22	5	2	1	1	180	191	155	99	142	106	123	56	47	812	639	916	697	746	866	839
90	m	42	5	2	1	1	181	193	158	108	149	111	127	55	44	819	684	943	725	745	847	800
105	m	35	5	1	1	1	168	184	156	97	149	115	121	55	43	848	622	955	651	772	812	782
93	m	35	5	1	1	1	176	186	146	99	145	111	121	56	44	785	678	993	883	766	834	786
4	m	40	5	2	1	1	176	213	155	115	154	108	131	57	43	728	742	994	747	701	903	754
111	m	28	5	1	1	1	174	183	147	92	147	109	130	63	45	803	626	1000	626	742	884	714
23	m	20	5	2	1	1	177	184	158	94	138	108	118	52	42	859	595	873	681	783	855	808
16	m	20	5	2	1	1	166	197	156	108	139	115	127	57	45	792	625	894	777	827	914	789
7	m	32	5	2	1	1	160	190	160	100	143	100	127	54	44	842	632	894	699	699	888	815
120	m	31	5	2	3	3	160	195	159	104	144	107	125	50	40	815	654	906	722	743	868	808
87	m	31	5	1	3	3	175	194	154	106	142	105	127	58	44	794	688	922	746	739	894	759
64	m	19	5	2	3	3	187	162	101	152	119	135	135	62	46	866	624	938	664	783	888	742
116	m	39	5	1	3	3	165	199	158	102	147	95	128	56	44	794	646	930	694	646	871	786
77	m	46	5	1	3	0	174	188	155	104	142	108	131	63	43	824	671	916	732	760	922	682
80	m	37	5	1	3	3	173	183	147	102	141	105	129	60	41	803	694	959	723	745	915	683
11	m	25	5	2	1	3	166	187	155	104	144	103	128	60	42	829	671	929	722	715	889	700
73	m	21	5	1	3	1	170	186	149	105	144	103	135	62	44	801	705	966	729	715	938	709
12	m	24	5	1	3	1	192	154	103	150	100	135	135	62	50	802	669	974	687	667	900	806
2	m	36	5	1	3	0	165	201	156	111	141	103	132	55	44	776	712	904	787	730	936	800
17	m	19	5	2	0	0	169	194	154	100	142	101	131	60	46	794	649	922	704	711	922	767
117	m	38	5	3	3	1	174	204	164	105	159	113	147	60	48	804	640	969	660	711	924	800
136	m	33	5	3	3	1	173	193	161	100	146	108	133	62	44	834	621	906	685	739	911	709
3	m	36	5	3	3	1	173	193	161	100	146	108	133	62	44	834	621	906	685	739	911	709
70	m	30	5	3	3	1	174	196	156	103	149	120	130	50	48	796	660	955	691	638	805	960
79	m	27	5	3	3	1	170	199	160	100	148	104	132	63	46	804	631	925	692	703	892	730
103	m	19	5	3	3	1	172	190	157	108	147	95	128	61	40	826	688	936	735	646	871	656
38	m	26	5	3	3	1	174	197	159	94	140	113	130	55	48	807	591	880	681	807	929	873
49	m	30	5	4	1	0	169	182	151	107	135	100	119	58	45	839	709	894	793	741	882	776
83	m	38	5	3	0	0	172	190	157	103	143	103	124	57	51	826	656	911	720	720	867	895
36	m	20	5	3	0	0	171	202	150	106	144	100	132	57	46	743	707	940	752	709	936	807
76	m	40	6	1	0	0	171	181	158	104	144	107	138	63	41	873	658	912	722	743	958	651
105	f	24	2	1	1	1	153	173	155	94	133	104	118	60	45	879	625	882	709	786	901	650
198	f	36	3	1	0	0	163	170	152	95	134	94	122	50	45	879	625	882	709	786	901	650
148	f	59	3	1	0	0	169	187	161	114	141	99	126	62	41	861	708	876	808	702	894	661
203	f	48	3	1	0	0	161	191	149	99	144	107	131	58	47	780	664	966	688	743	909	810
197	f	28	3	1	0	0	162	183	155	107	144	105	128	59	42	847	690	929	743	729	889	712
149	f	48	3	1	0	0	163	186	161	110	146	96	125	59	42	866	683	907	753	658	856	712
143	f	30	3	2	1	1	158	178	146	100	137	100	126	56	40	820	685	938	729	729	919	714
129	f	24	3	2	1	1	157	177	154	101	136	96	114	56	38	870	656	883	743	706	838	679

INDIVIDUAL RECORDS—TONGAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	I	II	III	IV	V	VI	VII
137	f	26	3	2	3	1	172	197	155	114	138	101	140	65	43	787	736	890	826	732	101.4	66.2
170	f	49	3	1	3	0	158	185	143	99	137	92	123	34	44	77.3	69.2	95.8	72.3	67.2	89.8	81.5
176	f	39	4	2	1	0	187	183	157	105	151	106	132	60	45	85.8	86.9	96.2	69.5	70.2	87.4	75.0
179	f	21	4	1	0	2	168	193	147	98	134	92	122	54	43	76.2	66.7	91.2	73.1	68.7	81.0	79.6
151	f	40	4	1	2	0	169	184	151	103	136	96	130	60	44	82.1	68.2	90.1	75.7	70.6	95.6	75.3
146	f	50	4	1	0	....	157	183	154	99	142	101	104	50	42	84.2	64.3	92.2	69.7	71.1	73.2	84.0
216	f	35	4	2	3	0	160	170	150	104	139	95	119	53	40	88.2	69.3	92.7	74.8	68.4	85.6	75.5
124	f	28	4	1	3	1	161	187	157	111	152	97	130	60	42	83.9	70.7	98.8	73.0	63.8	85.5	70.0
171	f	24	4	4	2	0	171	191	151	105	138	97	123	55	44	75.8	69.5	91.4	76.1	70.3	89.1	80.0
167	f	30	4	3	1	0	159	198	150	114	139	102	124	54	46	75.8	76.0	92.7	82.0	73.4	89.2	85.2
135	f	20	5	2	0	0	182	180	165	106	144	102	129	57	44	91.7	64.2	88.3	73.6	70.8	89.6	77.2
190	f	60	5	2	1	0	162	178	159	102	140	106	130	59	39	89.3	64.2	88.0	72.9	75.7	92.9	66.1
191	f	58	5	1	....	....	153	175	149	98	131	101	115	61	43	85.1	65.8	87.9	74.8	77.1	87.8	70.5
215	f	29	5	2	0	0	163	173	157	105	137	102	119	52	38	90.8	66.9	87.3	76.6	74.4	86.9	73.1
192	f	37	5	2	0	0	159	187	149	99	130	102	132	56	42	79.7	66.4	87.2	76.2	78.5	101.5	75.0
202	f	68	5	1	....	....	164	189	146	95	124	96	119	60	42	77.2	85.1	84.9	76.6	77.4	95.9	70.0
185	f	57	5	1	0	0	174	195	144	103	144	104	126	51	42	73.8	71.5	100.0	71.5	72.2	87.5	82.4
177	f	40	5	2	0	0	160	183	151	104	143	104	123	80	41	82.5	68.9	94.7	72.7	69.9	86.0	68.3
168	f	54	5	1	0	0	161	180	145	107	137	96	126	61	48	80.6	73.8	94.5	78.1	70.1	91.9	78.7
125	f	63	5	2	....	....	172	189	163	109	154	99	134	67	47	86.2	66.9	94.3	70.8	64.3	80.7	70.2
122	f	24	5	2	1	0	155	181	141	107	133	100	119	55	43	77.9	75.9	94.3	80.4	75.2	89.5	78.2
218	f	22	5	1	0	0	150	177	146	99	132	99	119	53	41	82.5	67.8	90.4	75.0	75.0	90.2	77.4
205	f	30	5	1	0	0	155	191	149	101	133	103	117	54	38	78.0	67.8	89.3	75.9	77.4	87.9	70.4
187	f	47	5	2	0	0	156	188	146	103	136	97	119	56	44	77.7	70.6	93.2	75.7	71.4	87.5	78.6
209	f	48	5	2	1	0	169	190	158	105	141	104	131	56	40	83.2	66.5	89.2	74.5	73.8	92.9	71.4
158	f	22	5	2	0	0	169	195	155	99	145	115	128	56	40	79.5	63.9	93.6	68.3	79.3	88.3	71.4
154	f	18	5	2	0	0	170	184	147	101	135	100	120	55	42	79.9	68.7	93.9	74.8	74.1	88.9	76.4
219	f	55	5	1	....	....	160	179	152	99	142	101	124	56	41	84.9	65.1	93.4	69.7	71.1	87.3	73.2
141	f	52	5	1	....	....	158	177	147	100	138	98	120	57	44	83.0	68.0	93.9	72.5	71.0	86.9	77.2
161	f	47	5	2	1	0	159	193	158	111	142	106	133	66	46	81.9	70.2	89.9	78.2	74.6	93.7	69.7
204	f	26	5	1	0	0	160	183	149	102	133	100	119	53	38	81.4	68.5	89.3	76.7	75.2	89.5	71.7
142	f	23	5	1	0	0	161	187	146	102	137	97	117	56	41	78.1	69.9	93.8	74.4	70.8	85.4	73.2
224	f	26	5	2	0	0	164	176	152	108	141	107	128	56	42	86.4	71.2	92.8	76.6	75.9	86.5	75.0
182	f	38	5	1	1	0	165	194	148	98	135	100	122	60	43	76.3	66.2	91.6	72.6	74.1	94.8	71.7
175	f	19	5	2	0	0	165	187	141	100	133	90	129	61	42	77.0	69.4	92.4	75.2	67.7	96.9	68.8
186	f	30	5	2	0	0	163	187	151	100	138	105	128	52	42	80.8	66.2	91.4	72.5	76.1	92.8	80.8
172	f	27	5	2	0	0	167	186	147	98	134	96	128	49	43	79.0	66.7	91.2	73.1	71.6	95.5	82.7
134	f	22	5	2	1	0	154	180	149	101	133	100	118	49	41	82.8	67.8	89.3	75.9	75.2	88.7	83.7
139	f	30	5	1	0	0	168	201	155	104	143	105	135	56	50	77.1	67.1	92.3	72.7	73.4	94.4	89.3
165	f	20	5	2	1	0	171	188	148	106	137	94	124	58	38	78.7	71.6	92.6	77.4	68.6	90.5	65.5
145	f	23	5	2	1	0	159	177	145	99	130	103	139	65	43	81.9	68.3	89.7	76.2	79.2	106.0	69.2
164	f	19	5	2	0	0	159	191	142	104	126	93	117	54	36	74.4	73.2	88.7	82.5	73.8	92.9	66.7
166	f	21	5	2	1	0	165	182	143	102	130	92	123	56	38	78.6	71.3	90.9	78.5	70.8	94.6	67.9
201	f	25	5	1	0	0	160	181	150	109	137	95	122	57	39	82.9	72.7	91.3	79.6	69.3	89.4	68.4
144	f	25	5	2	1	1	153	183	148	105	137	99	128	57	38	80.9	70.9	92.6	76.6	72.3	93.4	66.7
156	f	24	5	2	1	1	160	179	145	102	131	101	128	57	41	81.0	70.3	90.3	77.9	77.1	97.7	71.9

INDIVIDUAL RECORDS—TONGAN SERIES, CONTINUED

A	B	C	D	E	F	G	1	2	3	4	5	6	7	8	9	1	11	111	IV	V	V1	VII
126	f	34	5	2	2	2	162	183	152	101	136	101	123	58	43	83.1	86.4	89.5	74.3	74.3	91.9	74.1
133	f	18	5	2	1	1	166	182	149	108	140	99	128	58	43	81.9	72.5	93.9	77.1	70.7	91.4	74.1
169	f	21	5	2	1	1	167	177	150	104	138	104	125	59	46	84.8	69.3	92.0	75.4	75.4	90.6	77.9
220	f	30	5	1	1	1	161	181	150	107	141	111	130	58	42	82.9	71.3	94.0	75.9	78.7	92.2	72.4
140	f	31	5	1	1	1	165	178	147	105	140	98	116	55	44	82.8	71.4	95.2	75.0	74.0	82.9	80.0
214	f	23	5	1	1	1	173	190	145	112	138	103	119	55	44	76.3	77.2	95.2	71.2	70.6	86.2	80.0
131	f	37	5	1	1	1	157	177	148	93	128	99	120	49	37	83.6	62.8	86.5	72.7	75.2	75.3	75.5
162	f	37	5	1	1	0	152	179	146	97	129	97	124	61	40	81.6	66.4	88.4	75.2	75.2	96.1	65.6
183	f	27	5	2	3	1	163	196	155	103	134	97	125	56	43	79.1	66.4	86.4	76.9	72.4	93.3	76.8
196	f	28	5	2	3	1	162	183	140	97	128	99	120	61	39	76.5	69.3	91.4	75.8	77.3	100.8	63.9
127	f	50	5	2	3	1	157	183	151	97	135	95	123	54	47	82.5	64.2	89.4	71.8	70.4	91.1	87.0
180	f	48	5	2	2	2	169	183	162	104	145	106	125	55	39	88.5	64.2	89.5	71.7	73.1	86.2	70.9
217	f	18	5	2	3	3	173	181	144	95	130	97	120	57	42	79.6	65.9	90.3	73.1	74.6	92.3	73.7
210	f	34	5	1	3	3	171	193	151	101	141	106	125	54	43	78.2	66.9	93.4	71.6	75.2	88.6	79.6
221	f	25	5	2	0	3	160	189	144	100	134	97	119	52	37	76.2	70.4	93.1	74.6	72.4	88.8	71.2
152	f	21	5	2	1	3	.....	183	145	106	137	100	117	53	46	79.2	73.1	94.5	77.4	72.9	85.4	86.6
130	f	30	5	3	1	0	161	179	155	103	136	96	124	62	41	86.6	66.4	87.7	75.7	70.6	91.2	66.1
155	f	19	5	5	0	0	159	178	149	99	130	93	114	50	44	83.7	66.4	87.2	76.2	71.5	87.7	88.0
178	f	22	5	3	1	0	154	182	151	106	131	96	123	60	40	82.9	66.2	86.8	80.9	73.3	93.9	66.7
189	f	21	5	4	1	0	162	176	154	103	132	90	122	57	40	87.5	66.9	85.7	78.0	68.2	92.4	70.2
163	f	26	5	4	0	0	158	184	154	114	145	100	123	56	38	83.7	74.0	94.2	78.6	68.9	84.8	67.9
132	f	25	5	4	1	0	162	180	154	106	141	97	128	57	43	85.6	63.8	91.6	75.2	68.8	89.0	75.4
123	f	20	5	3	3	1	154	174	155	97	146	97	130	59	43	89.1	62.6	94.2	66.4	66.4	90.0	72.9
128	f	19	5	3	3	1	169	189	153	106	149	100	123	55	45	81.1	66.7	84.7	78.7	78.7	90.8	81.8
206	f	22	5	3	0	1	166	184	144	102	139	96	118	49	38	78.3	70.8	96.5	73.4	69.1	84.8	77.6
200	f	24	5	3	1	0	164	187	151	107	137	97	120	57	41	80.8	70.9	90.7	78.1	70.8	87.6	71.9
133	f	33	5	4	1	1	163	185	150	100	127	100	123	55	45	81.1	66.7	84.7	78.7	78.7	86.8	81.8
157	f	30	5	3	3	1	165	195	154	108	135	96	128	63	45	78.9	70.1	87.7	80.0	71.1	94.8	71.4
159	f	18	5	3	3	1	157	182	145	101	134	91	126	52	37	79.7	69.7	92.4	75.4	67.9	94.9	78.7
211	f	30	5	3	3	1	164	186	142	105	138	100	131	61	48	76.3	73.9	97.2	76.1	72.5	74.9	71.2
211	f	22	6	2	1	0	166	179	153	102	135	100	124	59	40	85.5	66.7	88.6	75.6	68.1	91.8	67.8
173	f	30	6	1	2	0	154	186	149	105	132	91	119	56	40	80.1	70.5	88.2	79.6	74.9	90.2	69.8
207	f	39	6	1	1	1	162	183	146	103	138	107	116	53	37	79.8	71.9	90.4	79.6	73.5	87.9	69.8
174	f	29	6	2	1	1	163	188	150	103	138	107	127	55	46	79.8	68.7	92.0	74.6	77.5	92.0	83.6
225	f	22	6	2	3	0	166	187	145	105	122	93	124	56	41	75.4	72.4	84.1	86.1	76.2	101.6	73.2

EXPLANATION OF PLATES

The catalog numbers of the individuals illustrated are here given. By referring to the Appendix complete details as to stature, cephalic, facial, and nasal indices, and other measurements may be obtained.

PLATE I—POLYNESIAN MEN

1—No. 16	9—No. 146
2—No. 100	10—No. 184
3—No. 137	11—No. 58
4—No. 128 Chief	12—No. 194
5—No. 143	13—No. 88
6—No. 158	14—No. 146
7—No. 104	15—No. 40
8—No. 88	

PLATE II—MEN WITH A LARGE INDONESIAN ELEMENT

1—No. 28 marked incisor rim	9—No. 11
2—No. 5	10—No. 28
3—No. 2	11—No. 42
4—No. 11	12—No. 55
5—No. 27 part-Hawaiian	13—No. 9
6—No. 9	14—No. 27
7—No. 42	15—No. 2
8—No. 55	

PLATE III—POLYNESIAN WOMEN

1—No. 126	9—No. 172 marked incisor rim
2—No. 110—part-Hawaiian	10—No. 15
3—No. 7	11—No. 151
4—No. 145	12—No. 196
5—No. 81	13—No. 192
6—No. 182 marked incisor rim	14—No. 60
7—No. 180	15—No. 139
8—No. 148	

PLATE IV—WOMEN WITH A LARGE INDONESIAN ELEMENT

1—No. 50	9—No. 47
2—No. 44	10—No. 21 frizzly hair, but cephalic index 88.2
3—No. 3 part-Hawaiian	11—No. 44
4—No. 38	12—No. 50
5—No. 51	13—No. 35
6—No. 1	14—No. 6
7—No. 22	15—No. 51
8—No. 6	

PLATE V—MIXED AND UNCLASSIFIED TYPES

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|------------------------------------|------------|
| 1—No. 102 | 9—No. 23 |
| 2—No. 161 | 10—No. 54 |
| 3—No. 26 | 11—No. 152 |
| 4—No. 48 | 12—No. 31 |
| 5—No. 13 | 13—No. 116 |
| 6—No. 59 } long heads, high faces, | 14—No. 29 |
| 7—No. 49 } and broad noses | 15—No. 14 |
| 8—No. 153 | |

PLATE VI—TYPES MIXED WITH CAUCASIANS AND ASIATICS

- | | |
|--------------------|------------------------|
| 1—one-half Chinese | 10—one-half Chinese |
| 2—one-half Chinese | 11—one-quarter white, |
| 3—part-Chinese | one-quarter Tahitian |
| 4—part-Chinese | 12—one-quarter white |
| 5—one-half Chinese | one-quarter Tahitian |
| 6—one-half Chinese | 13—one-half English |
| 7—one-half Chinese | 14— |
| 8—one-half Chinese | 15—one-quarter Spanish |
| 9—one-half Chinese | one-quarter French |



TYPE I—POLYNESIAN MEN OF THE MARQUESAS. THESE MEN ARE CHARACTERIZED BY DENSE MOUSTACHES AND A MODERATE BEARD. THE BEARDS ARE MODERATELY LONG, THE FACES HIGH AND THE NOSES RELATIVELY NARROW. THE SKINS ARE A LIGHT YELLOWISH BROWN. THERE



TYPE II—THE INDONESIAN MEN OF THE MARQUESAS. NOS. 1, 2, AND 3 WITH THEIR PROFILES IN NOS. 10 AND 15 ARE PROBABLY THE BEST REPRESENTATIVES OF THIS TYPE. THEIR LIPS, NOSES, AND FACE PROPORTIONS ARE NOTABLE. THEIR SKINS ARE A DARKER BROWN THAN THAT OF THE POLYNESIANS.

Photographs by Handy and Linton.



TYPE I.—POLYNESIAN WOMEN OF THE MARQUESAS. THE HAIR OF THESE WOMEN FOR THE MOST PART IS STRAIGHT OR ONLY SLIGHTLY WAVY. THE THICKNESS OF THEIR LIPS IS MORE NOTICEABLE THAN IN THE MEN OF THIS TYPE. SOME OF THE WOMEN ARE OF THE "TITTI" GROUP. (See p. 2.)



TYPE II—INDONESIAN WOMEN OF THE MARQUESAS. NOS. 1, 2, 4 AND 7, WITH THEIR PROFILES IN 11, 12, AND 13 ARE THE BEST EXAMPLES OF THIS TYPE. NONE OF THIS HAIR CAN BE CALLED CURLY. WITH THE EXCEPTION OF NO. 10, WHO HAS FRIZZLY HAIR, THIS TYPE IS CHARACTERIZED BY HAIR WITH A MODERATE WAVE. NO. 10 IS NEGROID IN APPEARANCE, BUT HAS A CEPHALIC INDEX OF 88.

Photographs by Handy and Linton.



MIXED AND UNCLASSIFIED TYPES. SEVERAL OF THE WOMEN HAVE LONG HEADS, HIGH FACES, AND BROAD NOSES. NO. 9 HAS THE NEAREST APPROACH TO CURLY HAIR IN THE SERIES. NOS. 2, 11 AND 12 MAY BE DEGREEED OFF AS 2, 11 AND 12.



TYPES MIXED WITH CAUCASIANS AND ASIATICS. NOS. 1 TO 10 ARE ONE-HALF CHINESE. NOS. 11 AND 12 ARE ONE-QUARTER WHITE AND ONE-QUARTER TAHITIAN. NOS. 13 AND 14 ARE ONE-HALF ENGLISH AND NUMBER 15 IS ONE-HALF SPANISH AND ONE-QUARTER FRENCH. WHERE CAUCASIAN BLOOD IS PRESENT IT IS USUALLY APPARENT.

Photographs by Handy and Linton.

